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Wisconsin Projections 1988-2000

Industries
Occupations
Labor Force

Wisconsin Department of
Industry, Labor and Human Relations

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Prepared by:

Bureau of Labor Market Information
Division of Employment and Training Policy
Department of Industry, Labor and Human Relations
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Projecting labor market conditions is an art, not a science. Despite the ability to collect and process massive amounts of data, the projections process is not a mechanical exercise provided by our panel of economists and analysts knowledgeable about Wisconsin's economy. Members of this group included:

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Executive Summary

Wisconsin's industries compete in a worldwide market which includes countries with cheaper labor and countries with increasing efficiency to produce more goods with fewer people. To compete effectively, Wisconsin must have a labor force that can lead in invention and innovation, in quality, and in productivity. Wisconsin must compete based upon the quality of the State's labor force.

Planning, providing, and participating in education and training is preparing for the future. The education and training role of society is too important and too expensive for it not to be based on the best understanding of the present and projections of the future. Whatever the program, whether it be Education for Employment, Workplace Literacy, or the Job Training Partnership Act (JTPA), planners and teachers need projections of future occupational employment.

The projections in this report, ***Wisconsin Projections 1988 - 2000, Labor Force, Industry, Occupations***, replace earlier industry and occupational projections from 1986 to 2000. They are intended primarily for planners in education and in employment and training, and to satisfy the needs of the JTPA planning cycle. The information also should be useful in career guidance and vocational counseling. Individuals making a career choice, a career change, and job search decisions can use this report. The information is incorporated in the occupational descriptions in the Wisconsin Career Information System.

This picture of the future points to policy and program needs in the nineties. Each section of the report offers insight into this decade of the labor market in Wisconsin. Though presented as separate chapters these projections of labor force, industry growth, and occupational change should be examined as aspects of a larger picture.

In the next ten years, growth in the labor force will be slow, only about 12,000 a year. This is slower than the 33,000 per year growth of 1980 to 1987, and much slower than when the baby boom was entering the labor force in the 70s. There will be an absolute decline in the number of 16 to 34 year olds in the labor force of the year 2000.

Workers born in the baby boom are now 25 to 44 years old, and will be 35 to 54 years old by the year 2000. When they entered the labor force there were more of them than there were jobs available, and they have been in competition with themselves for jobs and advancement opportunities throughout their lives.

There are several implications of this slower labor force growth and the aging of the labor force.

The first is the opportunity for lower unemployment. When the labor force was growing rapidly because of the baby boom, the trend was clearly toward higher unemployment rates. Now, with fewer people entering the labor force, employment growth could sustain a trend toward lower unemployment rates.

A second implication of the changing labor force is the need to plan training for existing workers. Traditionally, education and training programs and policies have been targeted at young workers. Looking ahead, it is clear that improving education for only the smaller number of youth who will enter the labor force will not change the overall educational level of the labor force by the year 2000.

New technology and workplace management styles are changing the skills demanded of the workforce. These new skills are being required

not only of new workers but of workers trained and experienced in older processes. The challenge of the decade must be the investment in education and training for and by the baby boom generation. The people in this largest portion of the work force must be retrained to qualify for technical and skilled jobs that may otherwise go unfilled.

Some in the baby boom generation are turning to self-employment as an alternative to competing with themselves for advancement opportunities. A policy to help to make self-employment successful could be both a reemployment and a job creating strategy.

A third implication of these trends is the need for all young workers to enter the labor force prepared to meet the basic skill needs of employers. There is already pressure on educational institutions to educate youth more purposefully for the world of work. Educational programs, from basic literacy training to communication skills and computer training, must be emphasized to obtain the maximum potential from the lower labor supply and help produce full employment.

While the labor force is changing significantly, projections of industry employment to the year 2000 indicate no sharp variation from trends established in the past twenty years. Employment in retail trade and service industries will surpass manufacturing, which has been Wisconsin's largest employer.

Trends in goods production are becoming similar to the trends in agricultural production. Manufacturers continue to supply the world with goods using fewer people to produce more. In Wisconsin, printing, furniture making, and rubber and plastics industries will show healthy growth, while employment will decline in some industries such as transportation equipment and primary metal manufacturers.

Most of the fastest growing industries in the Wisconsin economy are in services producing businesses. The finance industry will show strong growth, along with transportation, legal and social services. The health service industry will add over 50,000 workers, more than any other industry. Reflecting the leisure time trends, hotels and eating and drinking places are also on the list of fast growing industries.

Both growth and changing skill requirements in industries have an impact on the kinds of occupations needed in the workforce. The Wisconsin machine tool industry offers an example. As technology makes it possible for fewer workers to monitor the machines that manufacture products, more people are needed with the ability to design, produce, and maintain these complex machines.

Changes in technology will continue to be reflected in the demand for workers with greater skills training. The consumer demand for services appears in the increase in occupations requiring the ability to work with people. The greatest growth will be in professional, paraprofessional and technical occupations which include a mix of both technical and people skills.

The two occupational categories with the lowest growth rates are precision production, craft and repair workers; and operators, fabricators and laborers. Automation in these jobs is reducing the demand for workers while increasing the quality and quantity of production. While there is no growth in the need for these workers, there will continue to be a need to replace workers in these occupations who are retiring and leaving the labor force.

The dynamic forces at work in the Wisconsin economy and labor market are reflected in these new projections of labor force and employment to the year 2000. Build your own adventure in the tables that follow!

Chapter 1 Population and Labor Force

The population that is the source of the labor force for the year 2000 is already born. Population is the major factor determining the size of the labor force and the number in different age groups. People who will make up the labor force in the year 2000 are already at least seven years old. Based upon this population, very slow growth is expected in the labor force to the year 2000. There will be continued shortages of young people entering the labor force, and a decline in the number ages 20-34. The labor force ages 35-44 will increase as the "baby boomers" age.

High birth rates between 1946 and 1964 created the "baby boom." As a result, the ten year age group with the largest population in 1990 is 25-34 years old with over 420,000 people. By the year 2000 this largest group will be 35-44 years old.

Because of the rapid decline in birth rates that followed the baby boom, there are less than 170,000 teenagers, 15-19 years old, in 1990. There are over 20,000 less people in this age group than in 1985, and over 50,000 less than in 1980. The lowest point in births in Wisconsin was in 1973.

While birth rates remain low, children of baby boom parents have created an "echo of the baby boom." These children are under 10 years old in 1990. The estimate of 370,000 children under 10 years old in 1990 does not compare, however, to the 460,000 of the baby boom years. (See table, title & page for population projections.) The "echo of the baby boom" is now in elementary school, creating a demand for more school space as well as teachers. Most of them are too young to enter the labor force by the year 2000.

Nationally, birth rates have not declined as much among minorities, and immigration has added to the minority population. Wisconsin is part of these national trends, and the addition of minorities to the Wisconsin population has undoubtedly been similar. Based upon national population trends, an increasing proportion of Wisconsin's labor force growth will be minorities.

As a result of these population changes and continuing trends in labor force participation rates, Wisconsin's total labor force growth will drop from the 1.4 percent per year growth experienced between 1980 and 1987 to a projected growth of only 0.5 percent per year from 1987 to 2000. This is a decline from a growth of about 33,000 in the labor force each year to a annual growth of about 12,000.

The 1987-2000 labor force growth rate for men will drop from 0.9 percent per year in 1980-1987, to only 0.2 percent per year. This is a drop from an annual net gain of 12,000 to an annual growth of only 3,000. The labor force growth rate for women will drop from 2.1 percent per year to 0.8 percent per year. Instead of 21,000 women added to the labor force per year between 1980 and 1987, there will be only 9,000 added per year between 1987 and 2000.

Between 1987 and 2000, there is a projected net increase of 156,000 in the labor force. The number of workers ages 35 to 54 is projected to increase by 389,000. Those age 55 and over will decrease by about 40,000.

Between 1987 and 2000, the younger labor force, ages 16 to 34, will decrease by 193,000.

There are implications for Wisconsin's development of a quality labor force by the year 2000 in these labor force trends. The smaller number of younger workers will contribute to continued pressure on schools to improve the quality of education and to provide basic competency for

all graduates. The large number of workers ages 35-44 will increase the importance of retraining mature workers to provide the needed skills.

The rapid decline in birth rates following the baby boom reduced the population that is now 16 to 24 years old. Shortages of entry level workers will not slow until about 1995 when the echo of the baby boom begins to enter the labor force. Even then the supply of new workers will not return to 1970-1980 levels.

Many entry level and part time jobs, typified by those in the fast food industry, exist partly because of the teen age labor supply. Most teenagers can work for lower wages because they are at least partially supported by their parents. Because of the decline in the 16 to 24 year old labor supply, the wage paid to starting workers in the fast food industry is above the minimum wage, and most fast food restaurants are advertising for help. The limited supply of teenage workers and corresponding higher wages required will slow growth in industries that rely upon this labor.

Competencies of new entrants to the labor force are distributed according to a normal curve. Employers became accustomed to a large labor supply and the ability to hire new entrants who were higher on this competency curve. Fewer new entrants and less competition for jobs mean that employers have to hire workers with competencies further down on the normal curve. To employers, this is perceived as a lowering of the quality of the labor supply. At the same time, new technology and new efforts to improve productivity and quality by involving workers are causing many employers to seek more highly educated and trained, or trainable, workers.

The impression of a lowering of the quality of the labor supply, and employers seeking highly educated and trained workers, puts increased pressure on schools to raise education standards. More of the students leaving school must achieve basic competencies to meet employers's needs. The quality of education must increase so that Wisconsin can compete in world markets in technology, productivity, and the quality of products and services.

Improving elementary and high school education will not, however, change the labor force by 2000. Most of those who will be in the labor force in the year 2000 are in the labor force today. Improving the quality of the labor force by the year 2000 will require improving the education and skills of people now 25-44 years old.

People in the 25-44 year old population bulge have been competing with themselves from the time they entered school. Because so many were competing for the available opportunities, many have never attained a job commensurate with their inherent abilities. A large number of these workers will continue to compete with themselves for the limited number of advancement positions at a time when new organizations of work are eliminating many middle level management positions.

One outlet for people stymied by lack of advancement opportunities, and one source of employment for older unemployed workers, is self-employment. Many in the baby boom generation will add self-employment as a source of fulfillment and income while keeping their wage and salary job. Others will enter self-employment after leaving or being laid off from their salary job. Many self-employed people who are successful will hire workers. Helping people to become successfully self-employed is both a re-employment and a job development strategy.

Baby boomers will be further frustrated by layoffs and plant closings. Building new plants will create too much productive capacity in some industries which will cause plant closings. New products will displace old ones causing both growth in employment and loss of jobs. Many of

those who lose jobs will be baby boomers, ages 25-44 now, and ages 35-54 by the year 2000.

This churning in the labor market will create a labor supply of mature workers. Most of the mature workers have investments in homes, and will not want to move to new locations in search for work. Many may not have the education and training that available jobs will require. Training programs for these dislocated workers will play a part in improving the quality of the work force by the year 2000.

Many employers recognize the importance of improving the education and skill of their employees in order to compete. Many mature workers could qualify for more highly skilled work with training or retraining. The challenge of the decade may be to target more employer training to these mature workers, and to generate enthusiasm and responsibility among mature workers for their own education and retraining.

While the challenge may be education and training, the opportunity of the decade is lower unemployment. When the labor force was growing rapidly due to the baby boom, even strong employment growth did not create enough jobs. Unemployment rates increased. Most economists did not understand the demographics behind the increasing unemployment. The economists' definition of "full employment" gradually changed from 3.0 percent unemployment to 5.5 or 6.0 percent unemployment. Now that the labor force is growing more slowly, normal employment growth could lead to redefining full employment at lower and lower levels.

Table 1.1 **Wisconsin Population Projections, 1980-2020**
By Sex, Age and Year

Male

	1980	1985	1990	1995	2000	2005	2010	2015	2020
0- 4	178,106	186,485	181,494	173,844	160,775	154,052	154,037	154,166	151,001
5- 9	176,838	176,480	186,791	182,471	175,398	162,584	155,846	155,836	156,084
10-14	200,628	174,350	176,430	187,108	183,245	176,496	163,791	157,110	157,258
15-19	235,729	191,464	169,216	171,372	182,445	178,994	172,699	160,351	154,230
20-24	224,245	221,366	182,535	161,916	163,867	175,074	171,597	165,923	154,110
25-29	202,269	212,810	213,074	176,243	156,505	158,655	169,564	166,303	160,964
30-34	174,492	199,089	211,279	213,556	176,941	157,223	159,888	170,508	167,535
35-39	134,816	171,664	198,746	211,140	214,907	178,247	158,480	161,515	172,024
40-44	114,326	131,154	169,356	196,664	209,135	213,711	177,396	157,799	161,004
45-49	108,397	110,016	128,051	165,834	193,082	205,516	210,440	174,701	155,502
50-54	114,757	103,066	106,281	124,088	161,183	188,167	200,331	205,316	170,464
55-59	110,275	107,178	97,710	101,261	118,608	154,566	180,810	192,326	197,350
60-64	96,828	100,380	99,162	90,880	94,861	111,551	145,762	170,834	181,430
65-69	84,317	86,201	89,474	88,730	81,757	86,001	101,428	132,607	155,816
70-74	62,949	69,720	71,634	74,592	74,371	68,984	73,041	86,214	112,757
75-79	43,288	46,764	52,342	54,267	56,945	57,247	53,462	56,674	66,955
80-84	25,539	27,378	30,131	34,163	35,912	38,150	38,679	36,183	38,407
85-89	12,416	12,578	13,960	15,754	18,276	19,672	21,225	21,529	20,197
90-94	4,191	4,314	4,623	5,396	6,351	7,653	8,474	9,167	9,309
95 & OVER	959	1,099	1,296	1,514	1,882	2,369	2,991	3,431	3,778
TOTAL	2,305,365	2,333,556	2,383,585	2,430,793	2,466,447	2,494,912	2,519,941	2,538,493	2,546,175

Source: Wisconsin Department of Administration, Wisconsin Population Projections 1980-2020, 1988.

Table 1.1 **Wisconsin Population Projections, 1980-2020 (cont.)**
By Sex, Age and Year

Female	1980	1985	1990	1995	2000	2005	2010	2015	2020
0- 4	168,825	178,343	172,938	165,616	153,196	146,757	146,707	146,856	143,834
5- 9	167,956	167,273	178,678	173,917	167,172	154,966	148,487	148,453	148,709
10-14	191,607	166,234	167,834	179,738	175,457	169,034	156,878	150,520	150,680
15-19	230,869	185,929	164,433	165,977	178,768	174,823	168,824	156,839	151,040
20-24	225,772	219,991	179,558	159,809	160,735	174,010	170,181	164,427	152,844
25-29	199,637	214,702	212,393	173,887	154,993	156,145	169,016	165,467	160,066
30-34	173,613	196,241	212,729	212,764	174,600	155,718	157,344	170,005	166,808
35-39	136,835	169,859	194,785	211,464	212,925	175,003	156,174	158,074	170,707
40-44	115,978	132,637	166,938	192,014	208,905	210,944	173,503	154,936	156,908
45-49	111,461	111,679	129,604	163,518	188,655	205,600	207,835	170,998	152,786
50-54	118,315	106,863	108,682	126,466	159,973	185,046	201,892	204,240	168,051
55-59	118,765	112,461	103,080	105,136	122,706	155,459	180,222	196,727	199,170
60-64	110,115	111,796	107,293	98,653	101,060	118,210	149,949	174,122	190,150
65-69	100,402	104,539	106,170	101,974	93,990	96,586	113,181	143,531	166,801
70-74	82,742	92,129	96,283	98,022	94,399	87,312	89,945	105,445	133,719
75-79	64,278	71,889	80,620	84,832	86,911	84,198	78,191	80,558	94,495
80-84	45,037	50,284	57,149	64,853	69,146	71,686	69,933	65,010	67,012
85-89	25,525	29,088	33,671	39,306	45,732	50,022	52,644	51,430	47,893
90-94	9,866	12,468	15,043	18,189	22,114	26,699	30,048	31,653	30,964
95 & OVER	2,679	3,797	5,355	7,115	9,306	12,143	15,543	18,304	20,104
TOTAL	2,400,277	2,438,202	2,493,236	2,543,250	2,580,743	2,610,361	2,636,497	2,657,595	2,672,741

Source: Wisconsin Department of Administration, Wisconsin Population Projections 1980-2020, 1988.

Table 1.1 **Wisconsin Population Projections, 1980-2020 (cont.)**
By Sex, Age and Year

Total

	1980	1985	1990	1995	2000	2005	2010	2015	2020
0- 4	346,931	364,828	354,432	339,460	313,971	300,809	300,744	301,022	294,835
5- 9	344,794	343,753	365,469	356,388	342,570	317,550	304,333	304,289	304,793
10-14	392,235	340,584	344,264	366,846	358,702	345,530	320,669	307,630	307,938
15-19	466,598	377,393	333,649	337,349	361,213	353,817	341,523	317,190	305,270
20-24	450,017	441,357	362,093	321,725	324,602	349,084	341,778	330,350	306,954
25-29	401,906	427,512	425,467	350,130	311,499	314,800	338,580	331,770	321,030
30-34	348,105	395,330	424,008	426,320	351,541	312,941	317,232	340,513	334,343
35-39	271,651	341,523	393,531	422,604	427,832	353,250	314,654	319,589	342,731
40-44	230,304	263,791	336,294	388,678	418,040	424,655	350,899	312,735	317,912
45-49	219,858	221,695	257,655	329,352	381,737	411,116	418,275	345,699	308,288
50-54	233,072	209,929	214,963	250,554	321,156	373,213	402,223	409,556	338,515
55-59	229,040	219,639	200,790	206,397	241,314	310,025	361,032	389,053	396,520
60-64	206,943	212,176	206,455	189,533	195,921	229,761	295,711	344,956	371,580
65-69	184,719	190,740	195,644	190,704	175,747	182,587	214,609	276,138	322,617
70-74	145,691	161,849	167,917	172,614	168,770	156,296	162,986	191,659	246,476
75-79	107,566	118,653	132,962	139,099	143,856	141,445	131,653	137,232	161,450
80-84	70,576	77,662	87,280	99,016	105,058	109,836	108,612	101,193	105,419
85-89	37,941	41,666	47,631	55,060	64,008	69,694	73,869	72,959	68,090
90-94	14,057	16,782	19,666	23,585	28,465	34,352	38,522	40,820	40,273
95 OVER	3,638	4,896	6,651	8,629	11,188	14,512	18,534	21,735	23,882
TOTAL	4,705,642	4,771,758	4,876,821	4,974,043	5,047,190	5,105,273	5,156,438	5,196,088	5,218,916

BIRTHS	368,899	353,500	337,598	311,572	298,214	297,927	298,056	291,704
DEATHS	202,710	211,746	221,260	229,681	237,134	247,945	264,934	282,687
NAT INCR	166,189	141,754	116,338	81,891	61,080	49,982	33,122	9,017
NET MIGR	-100,073	-36,691	-19,116	-8,744	-2,997	1,183	6,528	13,811
CHANGE	66,116	105,063	97,222	73,147	58,083	51,165	39,650	22,828

Source: Wisconsin Department of Administration, Wisconsin Population Projections 1980-2020, 1988.

Table 1.2 Labor Force Projections

Age Groups	Labor Force 1980	Percent of 1980 Group	Labor Force 1987	Percent of 1987 Total	Annual Growth Rate 1980-1987	Labor Force 2000	Percent of 2000 Total	Annual Growth Rate 1987-2000
Total	2,261,000	100.0%	2,491,000	100.0%	1.4%	2,647,000	100.0%	0.5%
16-19	210,000	9.3%	191,000	7.7%	-1.4%	168,000	6.4%	-1.0%
20-24	352,000	15.6%	301,000	12.1%	-2.2%	270,000	10.2%	-0.8%
25-34	606,000	26.8%	719,000	28.9%	2.5%	580,000	21.9%	-1.6%
35-44	412,000	18.2%	565,000	22.7%	4.6%	753,000	28.5%	2.2%
45-54	354,000	15.6%	385,000	15.5%	1.2%	586,000	22.1%	3.3%
55-64	259,000	11.5%	262,000	10.5%	0.2%	240,000	9.1%	-0.7%
65+	67,000	3.0%	68,000	2.7%	0.1%	50,000	1.9%	-2.3%
Men	1,299,000	100.0%	1,384,000	100.0%	0.9%	1,419,000	100.0%	0.2%
16-19	109,000	8.4%	98,000	7.1%	-1.6%	85,000	6.0%	-1.1%
20-24	189,000	14.5%	157,000	11.3%	-2.6%	141,000	9.9%	-0.8%
25-34	356,000	27.4%	405,000	29.3%	1.9%	309,000	21.8%	-2.1%
35-44	239,000	18.4%	314,000	22.7%	4.0%	398,000	28.1%	1.8%
45-54	208,000	16.0%	213,000	15.4%	0.3%	323,000	22.7%	3.2%
55-64	156,000	12.0%	158,000	11.4%	0.1%	137,000	9.7%	-1.1%
65+	42,000	3.2%	40,000	2.9%	-0.6%	26,000	1.9%	-3.1%
Women	962,000	100.0%	1,107,000	100.0%	2.1%	1,228,000	100.0%	0.8%
16-19	101,000	10.5%	93,000	8.4%	-1.2%	83,000	6.8%	-0.8%
20-24	163,000	17.0%	144,000	13.0%	-1.8%	129,000	10.5%	-0.8%
25-34	250,000	26.0%	314,000	28.4%	3.3%	271,000	22.1%	-1.1%
35-44	173,000	18.0%	251,000	22.7%	5.4%	355,000	28.9%	2.7%
45-54	145,000	15.1%	172,000	15.5%	2.4%	263,000	21.4%	3.3%
55-64	103,000	10.7%	104,000	9.4%	0.2%	103,000	8.4%	-0.1%
65+	26,000	2.7%	28,000	2.5%	1.2%	24,000	1.9%	-1.3%
Total	2,261,000	100.0%	2,491,000	100.0%	1.4%	2,647,000	100.0%	0.5%
Men	1,299,000	57.5%	1,384,000	55.6%	0.9%	1,419,000	53.6%	0.2%
Women	962,000	42.5%	1,107,000	44.4%	2.0%	1,228,000	46.4%	0.8%

Source: Labor Force 1980 from 1980 U.S. Census; Labor Force 1987 from Current Population Survey; Labor Force 2000 from DILHR, Labor Market Information Bureau Projections.

Table 1.3 **Labor Force Participation Rates, Men by Age Group, U.S. and Wisconsin (%)**

	16 - 19		20 - 24		25 - 34		35 - 44		45 - 54		55 - 64		65 & Over	
Year	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.
1955	58.9		86.8		97.6		98.1		96.5		87.9		39.6	
1960	56.1	54.1	88.1	80.0	97.5	95.3	97.7	96.5	95.7	95.2	86.8	87.2	33.1	30.1
1965	53.8		85.8		97.3		97.3		95.6		84.6		27.9	
1970	56.1	51.4	83.3	80.0	96.4	95.3	96.9	96.4	94.2	94.7	83.0	84.0	26.8	25.2
1975	59.2		84.6		95.3		95.6		92.1		75.8		21.7	
1980	60.5	58.0	85.9	84.1	95.2	94.5	95.5	95.9	91.2	93.3	72.1	75.5	19.0	17.8
1985	56.8	67.5	85.0	86.4	94.7	94.4	95.0	96.4	91.0	93.0	67.9	66.0	15.8	16.8
1986	56.4	61.7	85.8	88.0	94.6	93.8	94.8	95.9	91.0	93.0	67.3	70.4	16.0	17.3
1987	56.1	67.2	85.2	87.4	89.4	95.6	94.6	95.7	90.7	95.2	67.6	72.2	16.3	17.0
1988	56.9	72.3	85.0	87.7	94.3	95.3	94.5	96.9	90.9	94.5	67.0	70.8	16.5	18.1
1989	57.9	67.7	85.3	88.3	94.4	97.0	94.5	97.4	91.1	94.8	67.2	73.3	16.6	15.7
1990														
2000	60.2	58.2	87.5	85.9	93.6	92.6	93.9	93.9	90.1	91.1	63.2	64.2	9.9	9.6

Source: DILHR, Labor Market Information Bureau, Wisconsin Industry Projections to 2000, March 1989.

Table 1.4 **Labor Force Participation Rates, Women by Age Group, U.S. and Wisconsin (%)**

Year	16 - 19		20 - 24		25 - 34		35 - 44		45 - 54		55 - 64		65 & Over	
	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.	U.S.	Wis.
1955	39.7		45.9		34.9		41.6		43.8		32.5		10.6	
1960	39.4	38.6	46.1	45.9	36.0	32.5	43.4	40.7	49.8	46.9	37.2	35.6	10.8	10.8
1965	38.0		49.9		38.5		46.1		50.9		41.1		10.0	
1970	44.4	41.9	57.7	59.6	45.0	44.2	51.1	50.7	54.4	54.3	43.0	44.6	9.7	10.6
1975	49.1		64.1		54.6		55.8		54.6		41.0		8.3	
1980	52.9	54.6	68.9	72.4	65.5	67.1	65.5	68.5	59.9	63.3	41.3	44.9	8.1	7.8
1985	52.1	62.6	71.8	77.0	70.9	76.6	71.8	75.7	64.4	67.3	42.0	49.7	7.3	6.8
1986	53.0	66.1	72.4	74.0	71.6	76.7	73.1	72.9	65.9	69.4	42.3	47.2	7.4	6.9
1987	53.3	69.4	73.0	76.7	73.5	76.8	74.5	78.6	67.1	74.7	42.7	44.9	7.4	8.2
1988	53.6	70.7	72.7	79.6	72.7	76.3	75.2	83.0	69.0	78.0	43.5	47.1	7.9	7.0
1989	53.9	67.4	72.4	83.0	73.5	77.2	76.0	86.0	70.5	77.3	45.0	52.3	8.4	6.1
1990														
2000	59.2	58.2	78.4	80.4	78.4	80.4	82.3	84.2	75.4	75.4	45.8	46.0	5.4	5.6

Source: DILHR, Labor Market Information Bureau, Wisconsin Industry Projections to 2000, March 1989.

Table 1.5 Labor Force 1955-1988
Annual Average (in thousands)

Year	Labor Force	Unemployment		Employment	Nonfarm Wage & Salary Employment
		Number	% of Labor Force		
1955	1575.1	46.7	3.0	1525.3	1108.1
1960	1647.0	64.9	3.9	1580.6	1191.9
1965	1741.5	59.6	3.4	1680.6	1331.7
1970	1830.0	72.0	4.0	1757.0	1530.4
1975	2098.0	146.0	6.9	1952.0	1676.8
1980	2340.0	167.0	7.2	2172.0	1938.1
1985	2373.0	171.0	7.2	2202.0	1983.1
1986	2403.0	169.0	7.0	2234.0	2023.9
1987	2491.0	152.0	6.1	2342.0	2089.6
1988	2571.0	110.0	4.3	2465.0	2149.0
Projections to the Year 2000					
Mean	2647.0				2450.4
High					2702.9

Source: DILHR, Labor Market Information Bureau, 1991.

Chapter 2 Industry Trends

- ✓ **Industry employment in Wisconsin will grow by 12.0 percent between 1988 and the year 2000.**
- ✓ **At mid-century, one of two workers was employed in a goods-producing industry. By the turn of the century, two of three workers will be employed in a service-producing industry.**
- ✓ **By the year 2000, both the trade and the service industry groups will have surpassed manufacturing in employment.**

An economy, whether of a country, a state, or a local area, is identified with the products and services produced and marketed by the area. Wisconsin, for example, has been associated, for years, with the production of nonelectrical machinery, with paper products, and with food processing. The portion of state workers in these industries exceeds the national average. And a high level of employment in an industry implies dominance of the industry within a state or area.

Industries are broadly divided into two areas: goods producing and service producing. The goods-producing industries include mining, construction, and manufacturing. The service-producing industries include transportation, communication, and public utilities; trade; finance, insurance, and real estate; services; and government.

Goods-producing industries historically have been a mainstay in the Wisconsin economy. Thirty years ago, workers in the state's goods-producing industries comprised nearly half of all industry employment. In 1988, goods-producers accounted for nearly 30.0 percent of industry employment, still a healthy share. By the year 2000, workers in goods-producing industries will make up about 27.0 percent of industry employment...more than one in four workers. In the manufacturing industries, which include most of the goods-producing industries' employment, technological innovation will increase the production of goods while limiting labor input to a minimum.

During the 1980's, the economic shocks of two oil embargoes and of foreign competition severely reduced employment in Wisconsin manufacturing. State manufacturers are recovering by increasing technological innovation. Increased efficiency results in slow long-term employment growth.

Service-producing industry employment has far outpaced the goods-producing sector. Employment in the service-producing industries has multiplied two and a half fold since 1955, and is expected to grow by 18.0 percent from now to the end of the century.

An extensive amount of industry employment data has been derived from employers' payroll records. Industry employment data, however, excludes self-employed workers, agricultural workers, and those working without pay in family businesses. Industry employment figures include both full and part-time employes. A person working at two jobs will be counted twice. Consequently, industry employment is actually a count of the number of jobs being worked by people, not the number of people working.

Table 2.1 **Employment by Major Industry Category**
Wisconsin 1988 to 2000

Industry Title	1988 Annual Average Employment	2000 Projected Employment	Employment Change	Percent Change
Total All Industries	2,323,520	2,637,510	313,990	13.5%
Agriculture, Forestry and Fishing	8,900	11,060	2,160	24.3%
Mining	2,100	2,100	0	0.0%
Construction	71,500	76,700	5,200	7.3%
Manufacturing	550,600	571,610	21,010	3.8%
Transportation, Communication & Utilities	111,500	119,150	7,650	6.9%
Wholesale and Retail Trade	505,900	592,490	86,590	17.1%
Finance, Insurance and Real Estate	115,400	141,000	25,600	22.2%
Services	816,060	970,430	154,370	18.9%
Government	141,580	152,970	11,390	8.0%

Note: Totals may not add due to rounding.
Includes self employed.

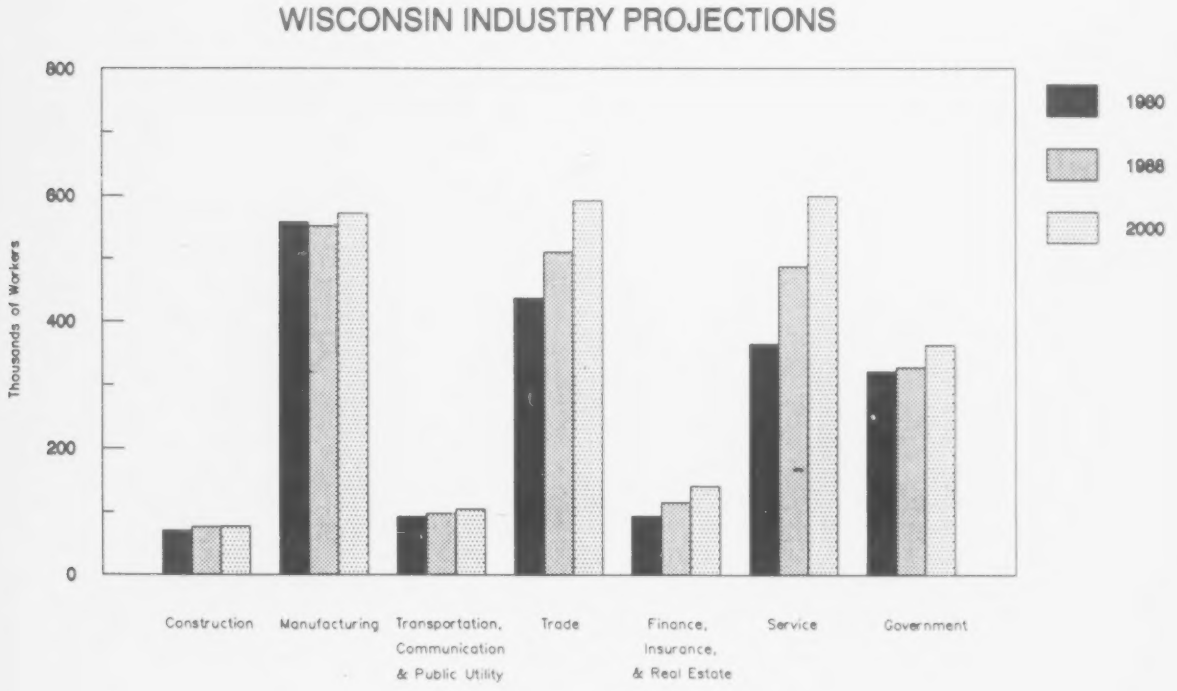


Table 2.2 Nonfarm Wage and Salary Employment

SIC Code	Industry Title	1988 Annual Average Employment	2000 Low(1)	2000 Mean(2)	2000 High(3)
	Nonfarm Wage and Salary(4)	2,149.0	2,227.2	2,450.4	2,702.9
10-14	Mining	2.2	2.0	2.1	2.4
15-17	Construction	71.5	70.0	76.7	89.3
19-39	Manufacturing	550.6	507.9	571.7	625.6
	Durable Goods Manufacturing	338.0	305.5	344.4	378.9
24	Lumber and Wood Products	28.3	22.7	29.8	34.3
25	Furniture and Fixtures	11.8	10.4	12.4	13.9
32	Stone, Clay and Glass Products	9.1	8.8	9.6	10.3
33	Primary Metal Industries	21.9	17.4	20.4	24.0
34	Fabricated Metal Products	57.4	54.5	60.3	65.3
35	Machinery, Except Electrical	107.3	103.7	110.9	117.9
36	Electric and Other Electronic Equipment	47.4	46.0	48.8	51.2
37	Transportation Equipment	32.1	21.5	27.5	33.0
38	Instruments and Related Products	12.8	11.5	14.8	18.2
39	Miscellaneous Manufacturing Industries	9.9	9.0	9.8	10.8
	Nondurable Goods Manufacturing	212.6	202.4	227.3	246.7
20	Food and Kindred Products	62.5	59.5	62.5	64.7
22	Textile Mill Products	4.7	2.9	3.9	4.6
23	Apparel and Other Textile Products	7.4	6.4	7.2	8.4
26	Paper and Allied Products	50.1	47.8	52.7	56.0
27	Printing and Publishing	43.8	44.4	52.1	57.0
28	Chemicals and Allied Products	10.5	10.2	11.2	12.3
29	Petroleum and Coal Products	0.3	0.1	0.3	0.3
30	Rubber & Miscellaneous Plastics Products	26.6	27.0	32.4	37.2
31	Leather and Leather Products	6.7	4.1	5.0	6.2
40-49	Transportation and Public Utilities(5)	97.4	98.2	104.2	111.7
50-59	Trade	505.9	541.9	592.4	622.4
60-67	Finance, Insurance and Real Estate	115.4	109.6	141.0	183.9
70-89	Services(6)	479.9	546.7	599.4	682.0
90-94	Government(7)	326.2	351.0	363.0	385.6
	Goods Producing Industries	624.3	579.9	650.5	717.2
	Service Producing Industries	1,524.8	1,647.4	1,799.9	1,985.7

(1) Low is the arithmetic mean of the three lowest forecasts.
(2) Mean is the arithmetic mean of all forecasts.
(3) High is the arithmetic mean of the three highest forecasts.
(4) Does not include self-employed or unpaid family workers.
(5) Does not include post office.
(6) Does not include state and local government hospital and education workers.
(7) Includes all government workers. Later tables will have post office, state and local government hospital and education workers included with private industry counterparts since it facilitates more accurate conversion to occupations.

Table 2.3 Detailed Employment Projections - 2000 Forecast Range

SIC Code	Industry Title	1988 Annual Average Employment	2000 Projected Employment	Employment Change	Percent Change
	Total All Industries	**2,323,520**	**2,637,510**	**313,990**	**13.5%**
	Agriculture, Forestry and Fishing	**8,900**	**11,060**	**2,160**	**24.3%**
070	Agricultural Services	8,900	11,060	2,160	24.3%
	Mining	**2,100**	**2,100**	**0**	**0.0%**
100	Metal Mining	40	40	0	0.0%
130	Oil and Gas Extraction	10	10	0	0.0%
140	Nonmetallic Minerals, Except Fuels	2,050	2,050	0	0.0%
	Construction	**71,500**	**76,700**	**5,200**	**7.3%**
150	General Building Contractors	20,300	21,550	1,250	6.2%
160	Heavy Construction Contractors	7,800	8,240	440	5.6%
170	Special Trade Contractors	43,400	46,910	3,510	8.1%
	Durable Goods Manufacturing	**338,000**	**344,310**	**6,310**	**1.9%**
240	Lumber and Wood Products	28,300	29,800	1,500	5.3%
250	Furniture and Fixtures	11,800	12,400	600	5.1%
320	Stone, Clay and Glass Products	9,100	9,600	500	5.5%
330	Primary Metal Industries	21,900	20,400	-1,500	-6.8%
340	Fabricated Metal Products	57,400	60,300	2,900	5.1%
350	Machinery, Except Electrical	107,300	110,900	3,600	3.4%
360	Electric and Other Electronic Equipment	47,400	48,800	1,400	3.0%
370	Transportation Equipment	32,100	27,500	-4,600	-14.3%
380	Instruments and Related Products	12,800	14,800	2,000	15.6%
390	Miscellaneous Manufacturing Industries	9,900	9,800	-100	-1.0%
	Nondurable Goods Manufacturing	**212,600**	**227,300**	**14,700**	**6.9%**
200	Food and Kindred Products	62,500	62,500	0	0.0%
220	Textile Mill Products	4,700	3,900	-800	-17.0%
230	Apparel and Other Textile Products	7,400	7,200	-200	-2.7%
260	Paper and Allied Products	50,100	52,700	2,600	5.2%
270	Printing and Publishing	43,800	52,100	8,300	18.9%
280	Chemicals and Allied Products	10,500	11,200	700	6.7%
290	Petroleum and Coal Products	300	300	0	0.0%
300	Rubber & Miscellaneous Plastics Products	26,600	32,400	5,800	21.8%
310	Leather and Leather Products	6,700	5,000	-1,700	-25.4%
	Transportation	**75,800**	**81,440**	**5,640**	**7.4%**
400	Railroad Transportation	3,300	3,800	500	15.2%
410	Local and Interurban Passenger Transit	11,700	12,630	930	7.9%
420	Trucking and Warehousing	38,100	39,940	1,840	4.8%

Table 2.3 Detailed Employment Projections - 2000 Forecast Range (cont.)

SIC Code	Industry Title	1988 Annual Average Employment	2000 Projected Employment	Employment Change	Percent Change
430	U.S. Postal Service	14,100	14,950	850	6.0%
440	Water Transportation	1,700	1,520	-180	-10.6%
450	Transportation by Air	3,200	3,790	590	18.4%
460	Pipelines, Except Natural Gas	200	200	0	0.0%
470	Transportation Services	3,500	4,620	1,120	32.0%
	Communications and Utilities	**35,700**	**37,710**	**2,010**	**5.6%**
480	Communications	18,300	18,950	650	3.6%
490	Electric, Gas and Sanitary Services	17,400	18,760	1,360	7.8%
	Wholesale Trade	**108,700**	**123,620**	**14,920**	**13.7%**
500	Wholesale Trade, Durable Goods	59,400	68,850	9,450	15.9%
510	Wholesale Trade, Nondurable Goods	49,300	54,780	5,480	11.1%
	Retail Trade	**397,200**	**468,870**	**71,670**	**18.0%**
520	Building Material and Garden Supplies	19,700	23,190	3,490	17.7%
530	General Merchandise Stores	48,800	55,810	7,010	14.4%
540	Food Stores	57,600	68,550	10,950	19.0%
550	Automotive Dealers and Service Stations	42,400	47,900	5,500	13.0%
560	Apparel and Accessory Stores	16,900	18,410	1,510	8.9%
570	Furniture and Homefurnishings Stores	14,700	18,030	3,330	22.7%
580	Eating and Drinking Places	142,800	174,730	31,930	22.4%
590	Miscellaneous Retail	54,300	62,260	7,960	14.7%
	Finance, Insurance and Real Estate	**115,400**	**141,000**	**25,600**	**22.2%**
600	Banking	27,600	30,820	3,220	11.7%
610	Credit Agencies Other Than Banks	15,700	21,660	5,960	38.0%
620	Security, Commodity Brokers and Services	4,700	7,530	2,830	60.2%
630	Insurance Carriers	40,400	46,870	6,470	16.0%
640	Insurance Agents, Brokers and Service	10,100	13,560	3,460	34.3%
650	Real Estate	14,200	16,520	2,320	16.3%
660	Comb. Real Estate, Insurance, Etc.	200	160	-40	-20.0%
670	Holding and Other Investment Offices	2,500	3,890	1,390	55.6%
	Services	**816,060**	**970,430**	**154,370**	**18.9%**
700	Hotels and Other Lodging Places	22,300	26,610	4,310	19.3%
720	Personal Services	25,800	29,330	3,530	13.7%
730	Business Services	81,700	111,310	29,610	36.2%
750	Auto Repair, Services and Garages	12,800	15,470	2,670	20.9%
760	Miscellaneous Repair Services	4,500	4,870	370	8.2%
780	Motion Pictures	2,200	2,180	-20	-0.9%

Table 2.3 Detailed Employment Projections - 2000 Forecast Range (cont.)

SIC Code	Industry Title	1988 Annual Average Employment	2000 Projected Employment	Employ-ment Change	Percent Change
790	Amusement and Recreation Services	18,500	21,210	2,710	14.6%
800	Health Services	176,120	226,860	50,740	28.8%
810	Legal Services	11,900	15,270	3,370	28.3%
820	Educational Services	186,700	211,560	24,860	13.3%
830	Social Services	36,600	47,780	11,180	30.5%
840	Museums, Botanical, Zoological Gardens	500	570	70	14.0%
860	Membership Organizations	43,900	45,760	1,860	4.2%
880	Private Households	174,530	189,210	14,680	8.4%
881	Private Households	2,300	2,200	-100	-4.3%
883	Self-Employed	167,400	183,650	16,250	9.7%
884	Unpaid Family Workers	4,830	3,370	-1,460	-30.2%
890	Miscellaneous Services	18,000	22,450	4,450	24.7%
	Government	**141,580**	**152,970**	**11,390**	**8.0%**
910	Federal Government	15,100	15,400	300	2.0%
920	State Govt., Exc. Education & Hospitals	26,940	29,370	2,430	9.0%
930	Local Govt., Exc. Education & Hospitals	99,540	108,200	8,660	8.7%

Note: Employment rounded to nearest 10.
Numbers may not add due to rounding.
Employment in Government-owned industries such as education is included with private employment in the industry. Government here refers to administrative and political functions. Self-employed and unpaid family workers are also included here.

Table 2.4 Fastest Growing Industries

SIC Code	Industry Title	1988 Annual Average Employment	2000 Projected Employment	Employment Change	Percent Change
620	Security & Commodity Brockers, Dealers	4,700	7,530	2,830	60.2%
670	Holding and Other Investment Offices	2,500	3,890	1,390	55.6%
610	Credit Agencies Other Than Banks	15,700	21,660	5,960	38.0%
730	Miscellaneous Business Services	81,700	111,310	29,610	36.2%
640	Insurance Agents, Brokers & Services	10,100	13,560	3,460	34.3%
470	Transportation Services	3,500	4,620	1,120	32.0%
830	Social Services	36,600	47,780	11,180	30.5%
800	Health Services	176,120	226,860	50,740	28.8%
810	Legal Services	11,900	15,270	3,370	28.3%
890	Miscellaneous Services	18,000	22,450	4,450	24.7%
070	Agricultural Services	8,900	11,060	2,160	24.3%
570	Furniture and Home Furnishings	14,700	18,030	3,330	22.7%
580	Eating and Drinking Places	142,800	174,730	31,930	22.4%
300	Rubber & Miscellaneous Plastics Products	26,600	32,400	5,800	21.8%
750	Automobile Repair, Services, Garages	12,800	15,470	2,670	20.9%
700	Hotels and Other Lodging Places	22,300	26,610	4,310	19.3%
540	Food Stores	57,600	68,550	10,950	19.0%
270	Printing and Publishing Industries	43,800	52,100	8,300	18.9%
450	Air Transportation	3,200	3,790	590	18.4%

Employment rounded to nearest 10

Source: DILHR, Labor Market Information Bureau, 1991

Four out of the top five fastest growing industries are in the major finance, insurance and real estate industry groups.

All four are expected to move ahead, as people continue to invest their disposable income.

Health services will grow by the greatest number, as it moves from 176,120 to 226,866, an increase of 50,740.

Business services and three manufacturing industries are also in the fastest growing industries.

Table 2.5 Declining Industries

SIC Code	Industry Title	1988 Annual Average Employment	2000 Projected Employment	Employment Change	Percent Change
884	Unpaid Family Workers	4,830	3,370	-1,460	-30.2%
310	Leather and Leather Products	6,700	5,000	-1,700	-25.4%
660	Comb. Real Est., Ins., Loan, Law Offices	200	160	-40	-20.0%
220	Textile Mill Products	4,700	3,900	-800	-17.0%
370	Transportation Equipment	32,100	27,500	-4,600	-14.3%
440	Water Transportation	1,700	1,520	-180	-10.6%
330	Primary Metal Industries	21,900	20,400	-1,500	-6.8%
881	Private Households	2,300	2,200	-100	-4.3%
230	Apparel and Textile Products	7,400	7,200	-200	-2.7%
390	Miscellaneous Manufacturing Industries	9,900	9,800	-100	-1.0%
780	Motion Pictures	2,200	2,180	-20	-0.9%
460	Pipe Lines, Except Natural Gas	200	200	0	0.0%
130	Oil and Gas Extraction	10	10	0	0.0%
100	Metal Mining	40	40	0	0.0%
200	Food and Kindred Products	62,500	62,500	0	0.0%
290	Petroleum and Coal Products	300	300	0	0.0%
140	Nonmetallic Mining and Quarrying	2,050	2,050	0	0.0%
910	Federal Government	15,100	15,400	300	2.0%

Employment rounded to nearest 10

Source: DILHR, Labor Market Information Bureau, 1991

Workers in the transportation equipment industry will decline by the greatest number from 1986 to 2000, an estimated decline of 4,600.

Unpaid family workers will lead the percent decline from 1988 to 2000, as more and more people are working for an establishment rather than themselves.

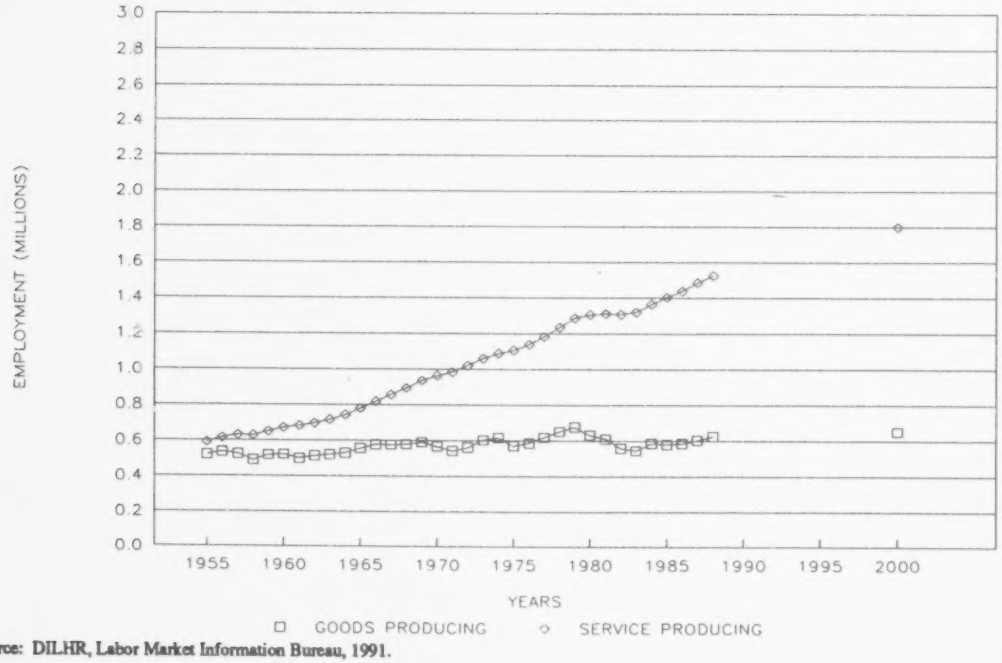
Nine of the fastest declining industries are in manufacturing.

Table 2.6 Goods and Service Producing Summary
Annual Average Employment (in thousands)

Year	Goods Producing	Service Producing
1955	518.9	589.2
1960	520.2	671.6
1965	554.3	777.5
1970	565.5	965.0
1975	570.3	1106.5
1980	630.7	1307.5
1985	580.4	1402.7
1986	584.4	1439.5
1987	602.9	1486.7
1988	624.3	1524.8
Projections to the Year 2000		
Mean	650.5	1799.9
High	715.2	1985.7
Low	579.9	1647.4

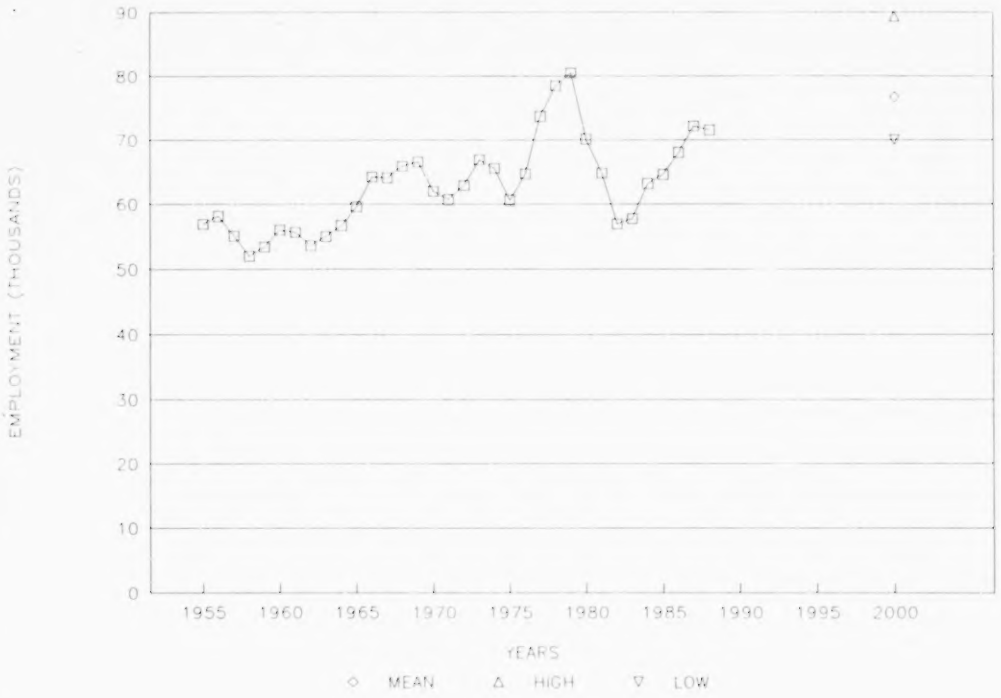
Source: DILHR, Labor Market Information Bureau, 1991.

Graph 2.2 Goods Producing and Service Producing



Source: DILHR, Labor Market Information Bureau, 1991.

Graph 2.3 Construction -- SIC 15 Through 17



Construction - The construction industry includes Standard Industrial Classification (SIC) groups 15, building construction, general contractors; 16, highway and other heavy construction, general contractors; and 17, construction, special trade contractors such as plumbers, painters, electricians, masons, carpenters, and roofers.

This industry is cyclical and employment depends upon a number of factors such as population growth, income levels and interest rates. Employment grew in Wisconsin from 1982 to 1988.

In 1988 this industry employed 71,500. The outlook is for moderate growth, causing the industry to employ 76,700 in the year 2000.

Graph 2.4 Manufacturing -- SIC 20 Through 39

Manufacturing - Manufacturing production is usually carried on for the wholesale market, and for other industries, rather than for direct sale to the domestic consumer.

Since 1983 manufacturing has grown by 52,400, to 550,600 in 1988. Employment is expected to grow to 571,700 by the year 2000.

Since the start of data collection of the nonfarm wage and salary data series in 1954, manufacturing has led all other industrial divisions in employment. But in the year 2000 services is projected to lead the industrial divisions in employment.

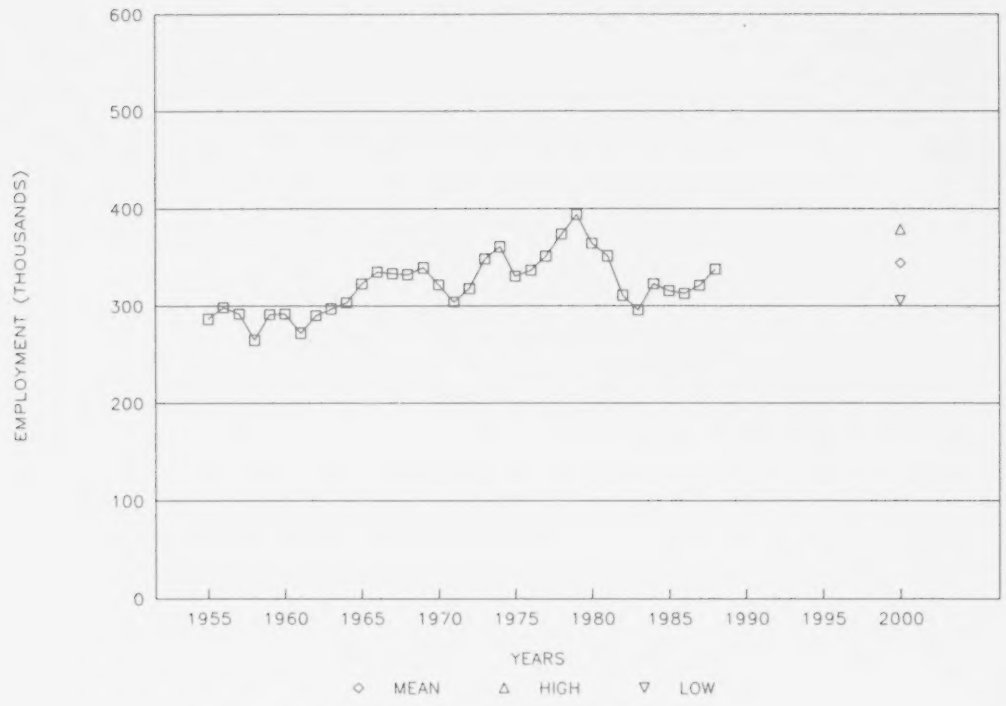
Table 2.7 Durable Goods Manufacturing
Annual Average Employment (in thousands)

Year	Total	Standard Industrial Classifications (SIC)									
		24	25	32	33	34	35	36	37	38	39
1955	286.5	19.3	10.7	5.7	26.2	33.5	88.7	48.6	35.1	9.2	9.6
1960	291.7	16.3	8.2	6.5	24.6	33.8	86.5	54.9	48.4	4.4	8.1
1965	322.5	16.8	7.3	7.1	29.0	38.7	106.2	55.5	45.6	6.1	10.1
1970	321.5	15.6	7.8	8.1	30.1	43.8	108.2	48.6	36.2	9.0	14.1
1975	330.3	17.9	8.4	8.1	26.0	51.2	112.4	45.3	41.7	9.6	9.8
1980	364.4	20.7	9.6	9.1	26.1	58.4	125.7	56.8	34.7	12.4	10.9
1985	315.5	22.9	9.8	7.9	19.5	51.4	100.5	49.9	32.3	11.4	9.8
1986	312.8	24.2	10.3	8.2	19.2	52.1	99.7	47.8	30.5	11.4	9.3
1987	321.3	26.6	10.9	8.8	20.1	53.0	101.3	46.5	33.0	12.0	9.2
1988	338.0	28.3	11.8	9.1	21.9	57.4	107.3	47.4	32.1	12.8	9.9
Projections to the Year 2000											
Mean	344.4	29.8	12.4	9.6	20.4	60.3	110.9	48.8	27.5	14.8	9.8
High	378.9	34.4	13.9	10.3	24.0	65.3	117.9	51.2	33.0	18.2	10.8
Low	305.5	22.7	10.4	8.8	17.4	54.5	103.7	46.0	21.5	11.5	9.0

SIC code definitions:

24 - Lumber and Wood Products
25 - Furniture and Fixtures
32 - Stone, Clay and Glass Products
33 - Primary Metal Industries
34 - Fabricated Metal Products
35 - Machinery, Except Electrical
36 - Electric and Electronic Equipment
37 - Transportation Equipment
38 - Instruments and Related Products
39 - Miscellaneous Manufacturing Industries

Graph 2.5 Durable Goods Manufacturing



Durable Goods - Durable goods manufacturing is a cyclical industry. It employs more than half of the workers in total manufacturing. Manufacturing has been on an upward trend since 1986, and this trend is expected to continue to 2000 when the industry will employ 344,300 workers.

Durable goods is composed of lumber and wood products, furniture and fixtures, stone clay and glass, primary metals, fabricated metals, machinery (nonelectrical), electric and electronic machinery, instruments and related products and miscellaneous manufacturing.

The industries that make up durable goods are shown on page 22.

Graph 2.6 Primary Metal Industries -- SIC 33

Primary Metal Industries - This industry includes foundries to make iron and steel and other metals, heat treating to give the metals desired properties, and rolling and extruding to shape the metal into sheets, bars, rods, pipe, or wire. These products are used in other manufacturing. Production of plastic products competes with primary metals.

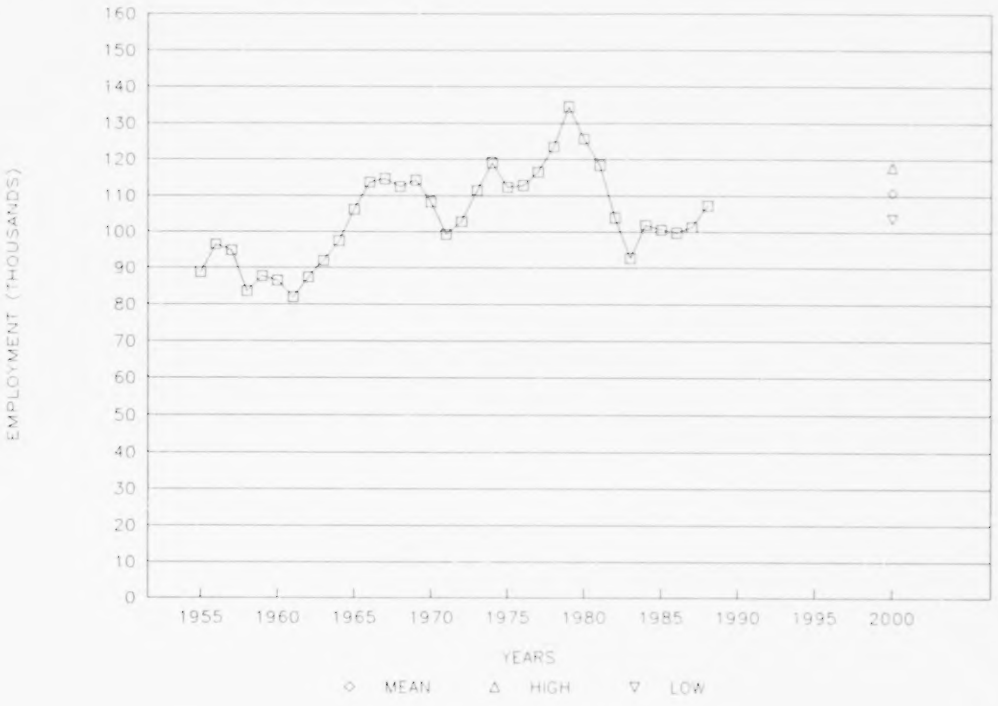
Primary metals peaked in employment in 1966 at 31,300, declined to 17,600 in 1983 and recovered to 21,900 in 1988. In the year 2000 it is projected to employ 20,400 people.

Graph 2.7 Fabricated Metal Products -- SIC 34

Fabricated Metal Products - This is one of Wisconsin's largest industries. This industry includes products such as metal cans, hand tools, cutlery, general hardware, nonelectrical heating equipment, fabricated structural metal products, screw machine products, metal forgings and stampings, and ordinance.

This industry increased from 53,000 in 1987 to 57,400 in 1988, which is half the total 1952 to 1988 increase. Employment still was 3,500 short of its all time high of 60,900 in 1979. It is projected to grow to 60,300 by the year 2000, almost equal to the all time high.

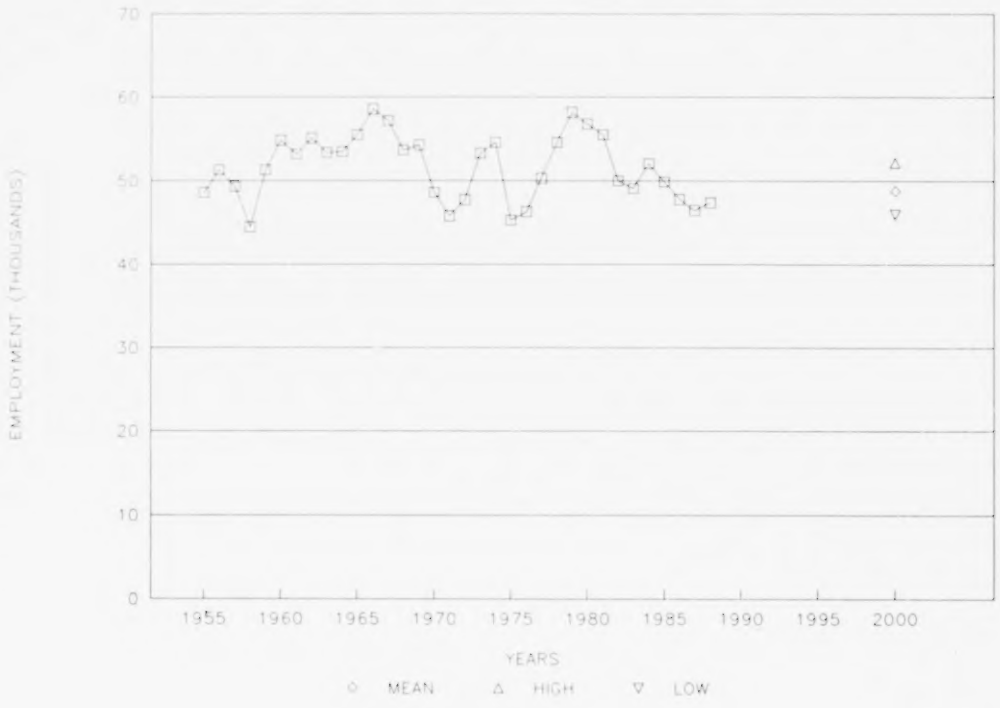
Graph 2.8 Machinery, Except Electrical -- SIC 35



Machinery, Except Electrical - It includes the manufacture of machinery and equipment, including electrical powered machinery, It ecludes electrical household appliances. Major nonelectrical machinery industries in Wisconsin include engines and turbines, farm equipment, and metal working machinery.

In the year 2000 this industry is projected to employ 110,900. This employment is 2,600 higher than that in 1988, showing a fairly stable pattern of growth.

Graph 2.9 Electric and Electronic Equipment -- SIC 36



Electric and Electronic Equipment - This industry manufactures electrical transmission and distribution equipment; electric motors and generators; industrial controls; electric welding apparatus; household appliances, electric lighting and wiring; radio, television, and communication equipment; and computers.

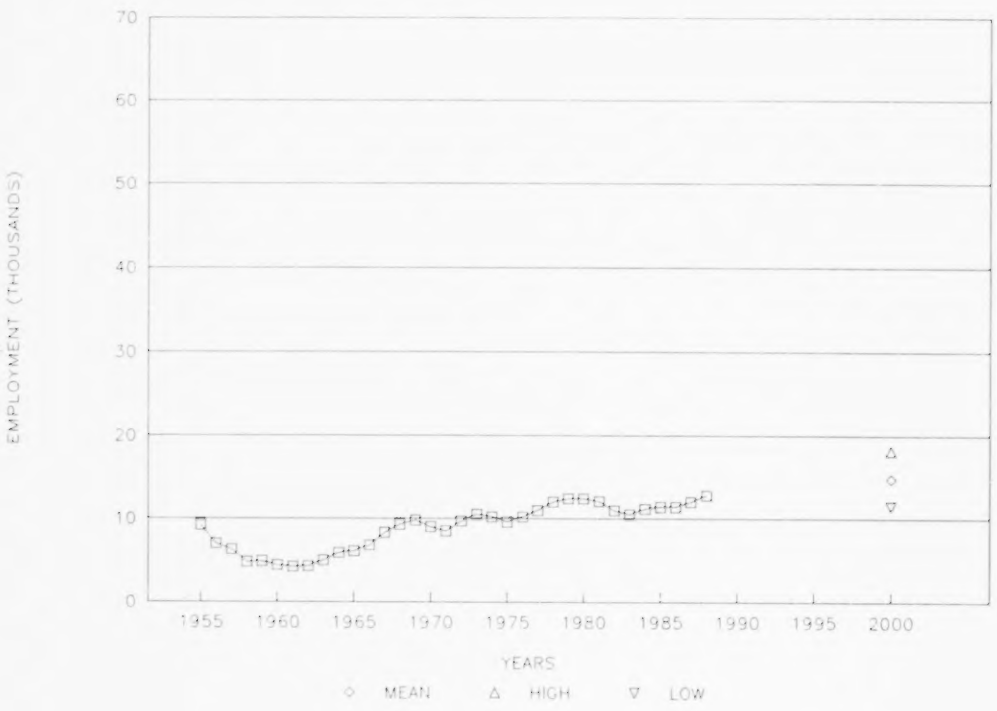
There were employment peaks in 1966 and 1979. The decline in employment from 1979 to 1987 was 10,800. The projection to 2000 shows the industry recapturing 1,400 employees to a projected 48,800.

Graph 2.10 Transportation Equipment -- SIC 37

Transportation Equipment - This industry includes motor vehicles and motor vehicle equipment; aircraft and aircraft parts; ship and boat building and repair; railroad equipment; motorcycles, bicycles and parts; and travel trailers and campers.

A moderate decline in Wisconsin's transportation equipment industry is projected to the year 2000. The industry peaked in 1960 at 48,400 employees and in 1988 (the year on which projections were based) employment was 32,100. The projected employment in the year 2000 is 27,500.

Graph 2.11 Instruments and Related Products -- SIC 38



Instruments and Related - This industry includes engineering, laboratory, scientific, and research instruments and related equipment; measuring and controlling instruments for home and industry; optical instruments and lenses; surgical, medical, and dental instruments and supplies; photographic equipment and supplies; and watches and clocks.

This small industry is expected to move ahead strongly. Its projection to the year 2000 of 14,000 employees is 15.6 percent greater than its employment in 1988.

The definition of the instruments and related industry is in transition due to a revision in the classification structure. Future numbers will be directly comparable. Projections are based upon the old classification structure.

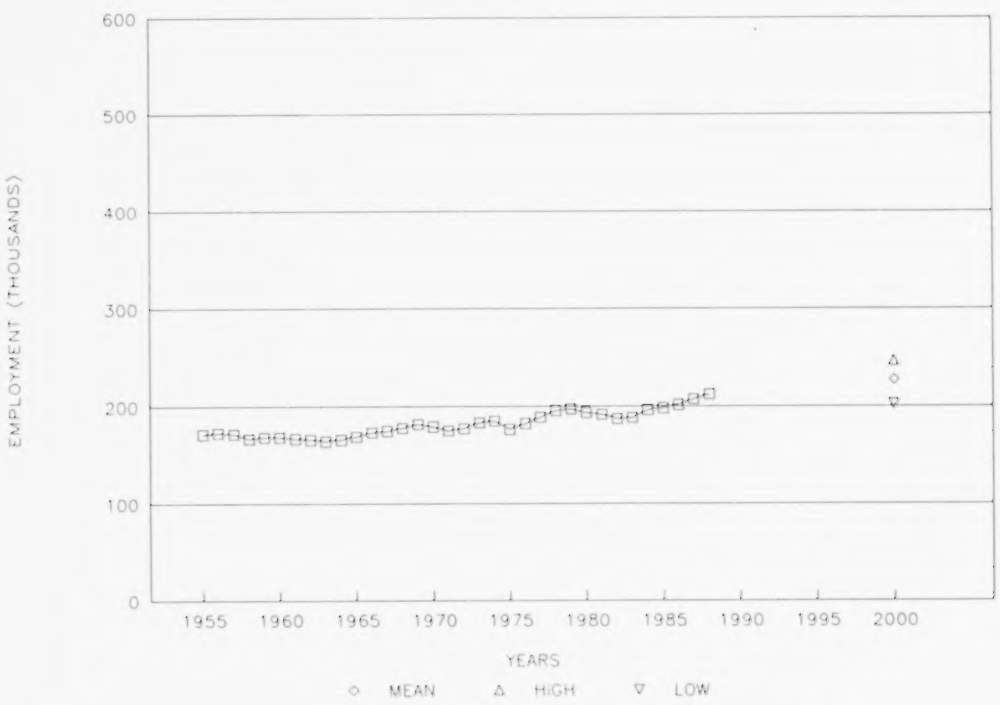
Table 2.8 Nondurable Goods Manufacturing Annual Average Employment (in thousands)

Year	Total	Standard Industrial Classifications (SIC)								
		20	22	23	26	27	28	29	30	31
1955	171.5	63.9	8.1	7.8	37.6	20.5	9.0	0.7	6.3	17.7
1960	168.7	62.1	6.9	7.2	39.9	21.8	6.4	0.5	6.9	17.1
1965	169.4	58.3	6.7	8.1	41.6	22.9	6.8	0.5	8.7	15.7
1970	179.4	57.6	7.0	6.8	45.0	25.4	11.3	0.4	12.1	13.9
1975	176.7	61.6	5.3	6.4	40.8	27.8	9.2	0.4	13.8	11.5
1980	193.6	64.9	4.7	6.5	47.8	32.4	9.7	0.4	17.6	9.4
1985	198.4	61.6	4.2	6.2	48.0	38.1	10.0	0.3	22.4	7.6
1986	201.7	62.0	3.9	6.5	48.9	39.4	10.1	0.3	23.7	6.9
1987	207.4	62.6	4.4	7.3	49.3	41.1	10.3	0.3	25.2	6.9
1988	212.6	62.5	4.7	7.4	50.1	43.8	10.5	0.3	26.6	6.7
Projections to the Year 2000										
Mean	227.3	62.5	3.9	7.2	52.7	52.1	11.2	0.3	32.4	5.0
High	246.7	64.7	4.6	8.4	56.0	57.0	12.3	0.3	37.2	6.2
Low	202.4	57.5	2.9	6.4	47.8	44.4	10.2	0.1	27.0	4.1

SIC code definitions:

20 - Food and Kindred Products
22 - Textile Mill Products
23 - Apparel and Other Textile Products
26 - Paper and Allied Products
27 - Printing and Publishing
28 - Chemicals and Allied Products
29 - Petroleum and Coal Products
30 - Rubber and Miscellaneous Plastics Products
31 - Leather and Leather Products

Graph 2.12 Nondurable Goods Manufacturing



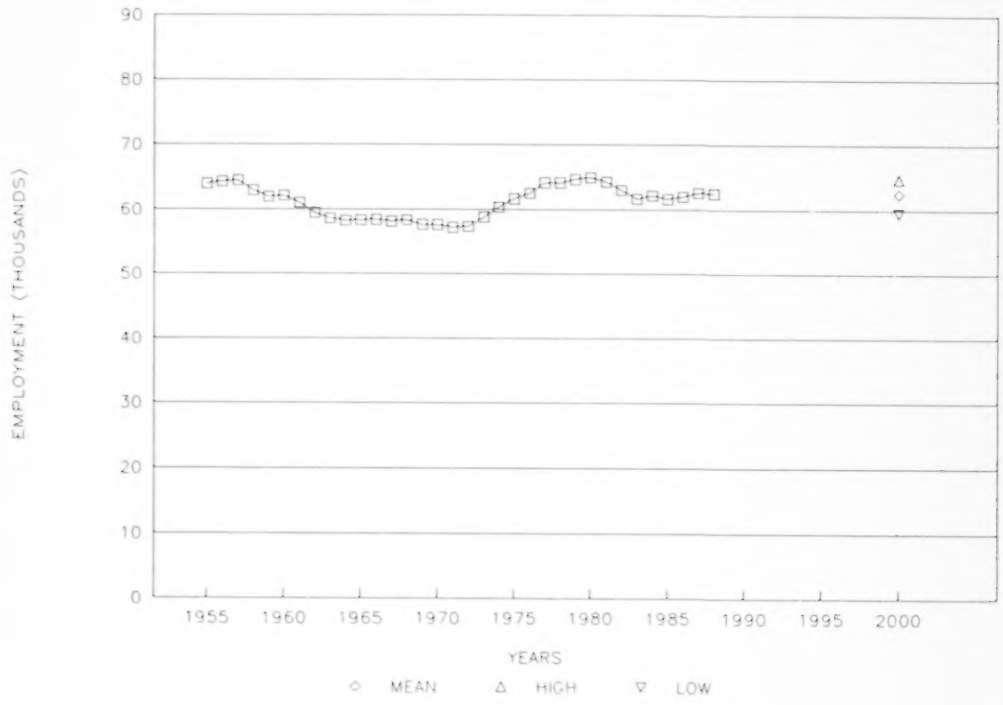
Nondurable Goods - This industry, employs workers who are engaged in the production of goods which last less than three years. The industry shows a more stable trend because of consumers rising income and the fact that the "baby boom" is moving into the years in which its income enables it to purchase more nondurable goods.

Employment in nondurable goods has been rising since 1982. The rise is expected to continue to the year 2000 when nondurable goods employment is projected to be 227,300.

Nondurable goods is composed of food and kindred products, textile mills, apparel and other textiles, paper and allied, printing and publishing, chemicals and allied, petroleum and coal, rubber, miscellaneous plastics and leather.

The industries that make up nondurable goods are shown on page 30.

Graph 2.13 Food and Kindred Products -- SIC 20

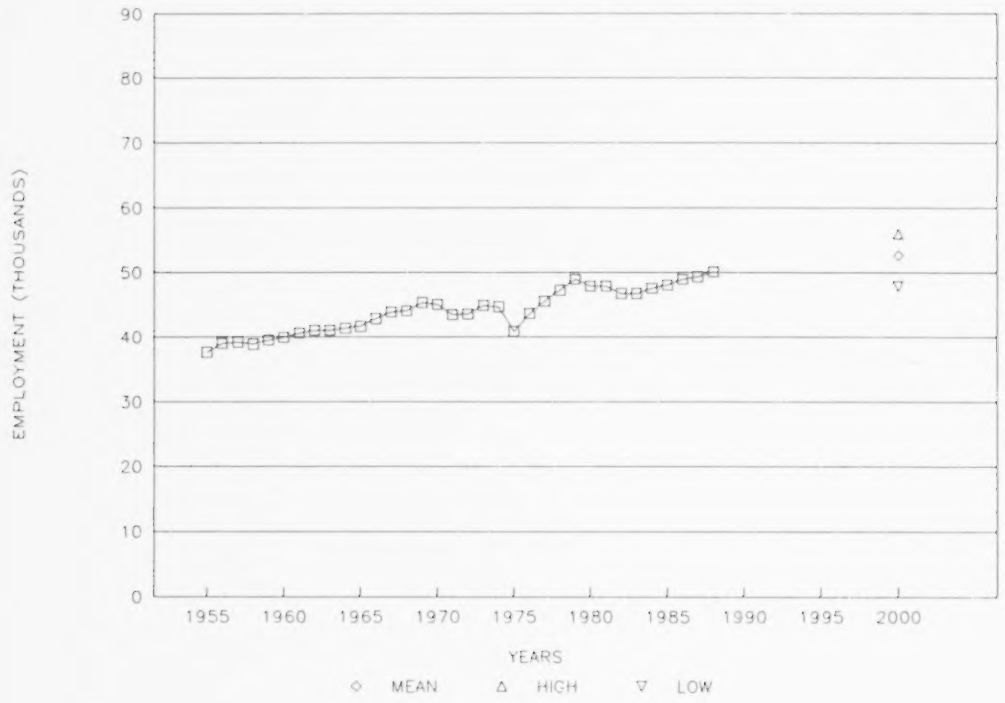


Food and Kindred Products - This major industrial group which is Wisconsin's largest nondurable manufacturing industry includes processing of food and beverages; and manufacturing of feed for animals and fowls.

From 1983 to 1988 this industry has had quite stable employment.

The projection is for continued stable employment with 62,500 employees in the year 2000.

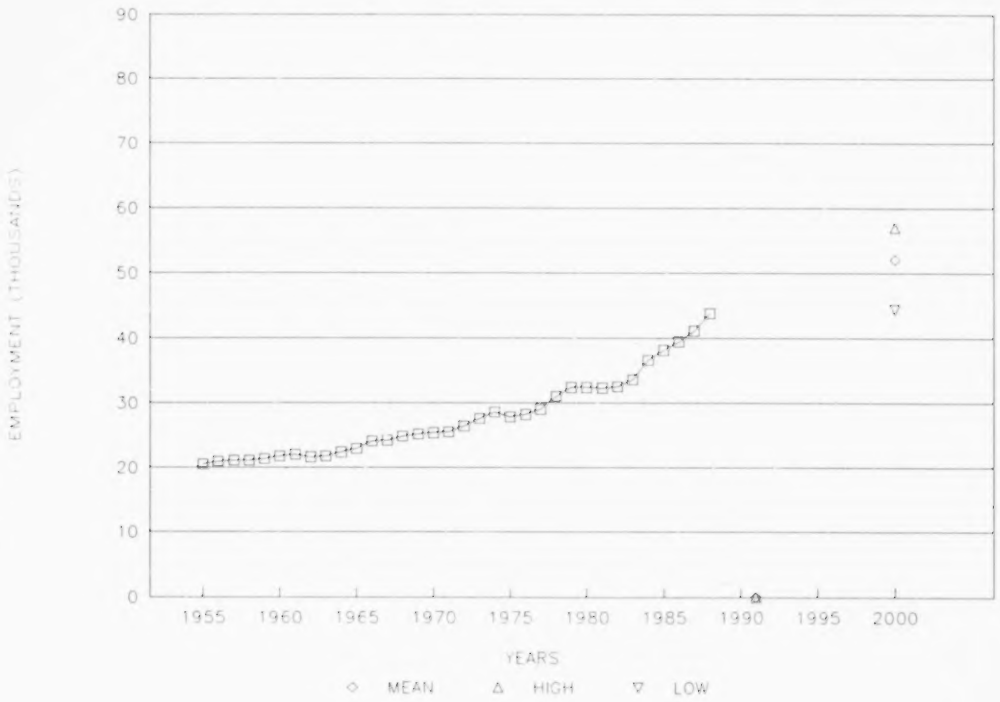
Graph 2.14 Paper and Allied Products -- SIC 26



Paper and Allied Products - This industry includes the manufacture of pulp, paper and paperboard, and the manufacture of related products such as coated paper, paper bags, paper boxes, and envelopes.

The paper industry is an employer of major strength and resilience in Wisconsin, moving in at a fairly even pace, with only four years of major downturns since 1954. The current projection is for "more of the same" growth at a rate of 5.2 percent to the year 2000. The projected employment for the year 2000 is 52,700.

Graph 2.15 Printing and Publishing -- SIC 27



Printing and Publishing - This industry includes the publication of books, newspapers, periodicals, and business forms, of commercial printing, bookbinding and other printing services.

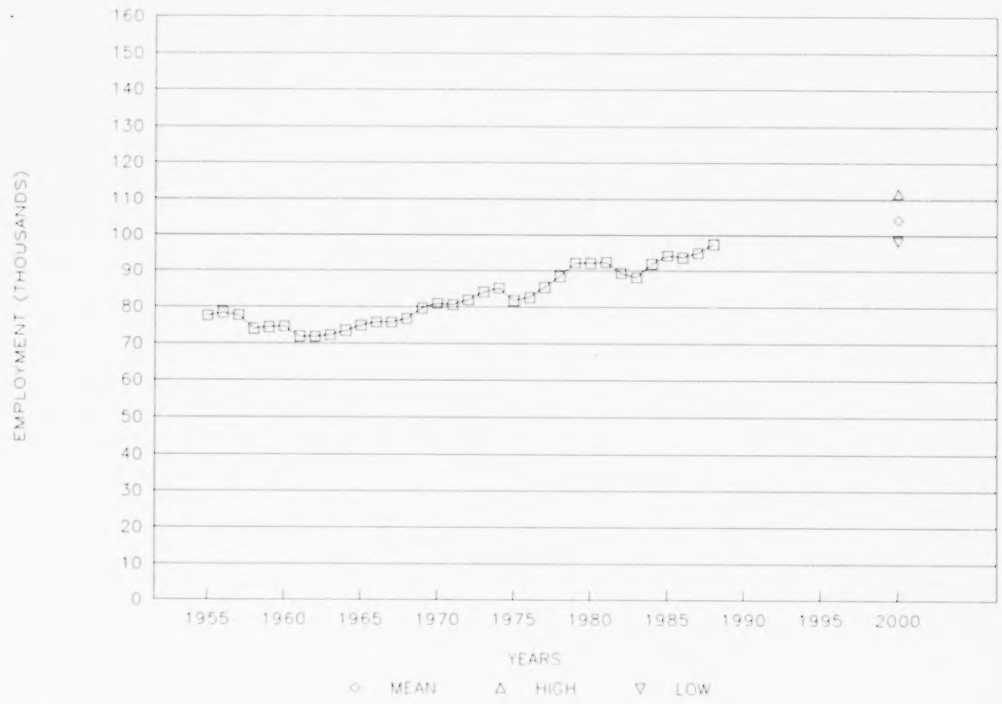
This industry weathered the years of the early 1980's with no significant downturn, when most manufacturing industries were declining strongly. Since that time it has increased steadily from 32,300 to 43,800, and it is expected to grow to 52,100 by the year 2000.

Graph 2.16 Rubber and Miscellaneous Plastics Products -- SIC 30

Rubber and Miscellaneous Plastics Products - This industry manufactures tires and inner tubes, rubber and plastic footwear, hose and belting and other fabricated or molded rubber and plastics products. This is classified as a nondurable industry because the useful life of the products is limited despite the fact that the material in these products may last a very long time.

Employment declined from 1979 to 1982 in this industry that is dominated by plastics products. But since 1982 employment has grown from 16,500 to 26,000 in 1988. Projectors see not as strong a growth rate to the year 2000, with the total employment in this industry being 32,000 employees.

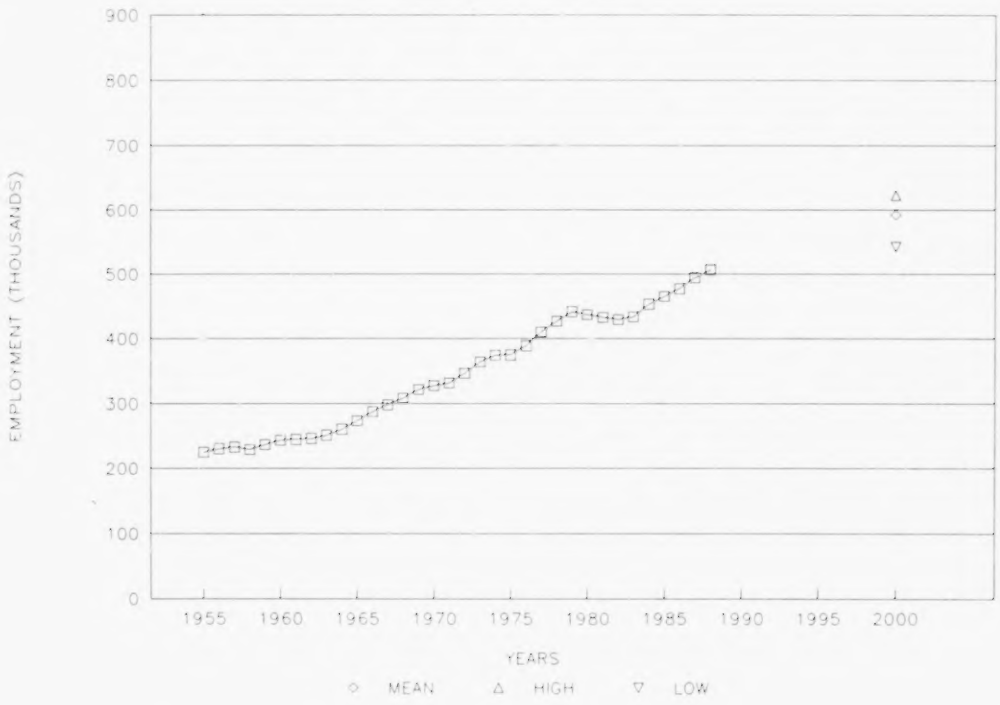
Graph 2.17 Transportation and Public Utilities -- SIC 40-49



Transportation and Public Utilities - This industry group includes railroads, trucking and warehousing, busses and taxi cabs, water and air transportation, pipelines; communication by telephone, telegraph, radio and television; and electric, gas, and sanitary services. The U.S. Postal Service is not included here because it was considered government in 1955. Originally these industries were grouped together because they were all regulated by the government as interstate trade or natural monopolies.

These industries have a consistent growth trend with only temporary decreases in employment during recessions. Employment in 1988 was 97,400 and the mean projected employment is to 104,200 by the year 2000.

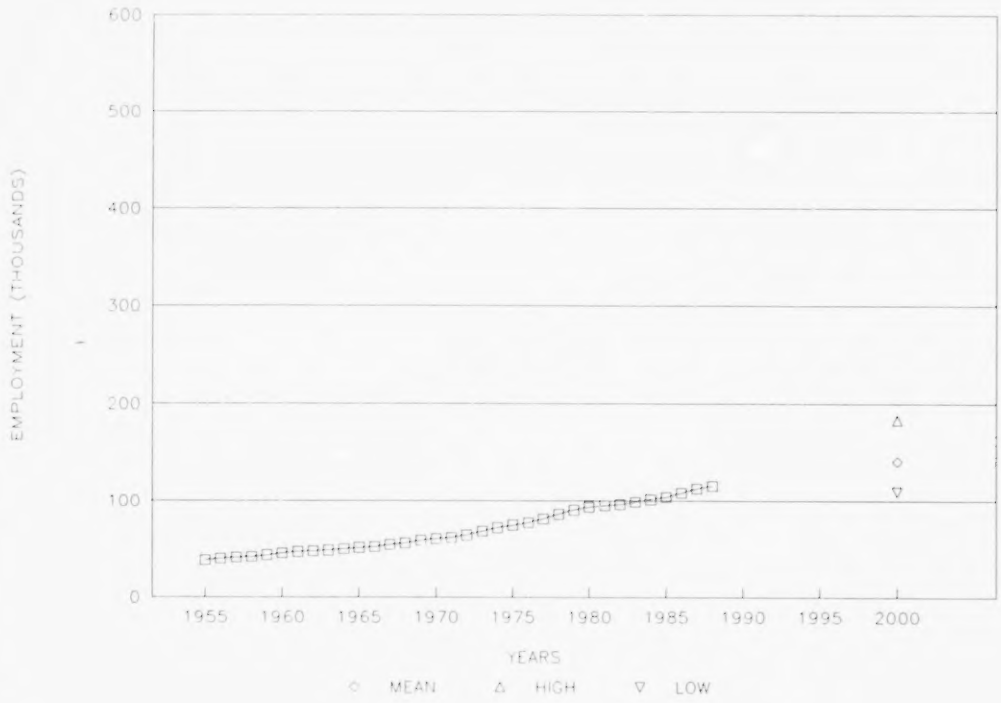
Graph 2.18 Wholesale and Retail Trade -- SIC 50-59



Wholesale and Retail Trade - Wholesalers primarily sell to retailers, businesses, farms, or othe wholesalers. Retail trade includes general merchandise stores, food stores, automotive dealers and gasoline stations, clothing stores, furniture and home furnishing stores, and eating and drinking places. Retail trade employment is much greater than wholesale trade.

Wholesale and retail trade employed 225,100 in 1955. Employment more than doubled to 505,900 in 1988. Recently part time employment has grown faster than full time jobs. Projected growth of 17.3 percent by the year 2000 will bring the number employed in full time and part time jobs up to 592,500. This will exceed manufacturing employment.

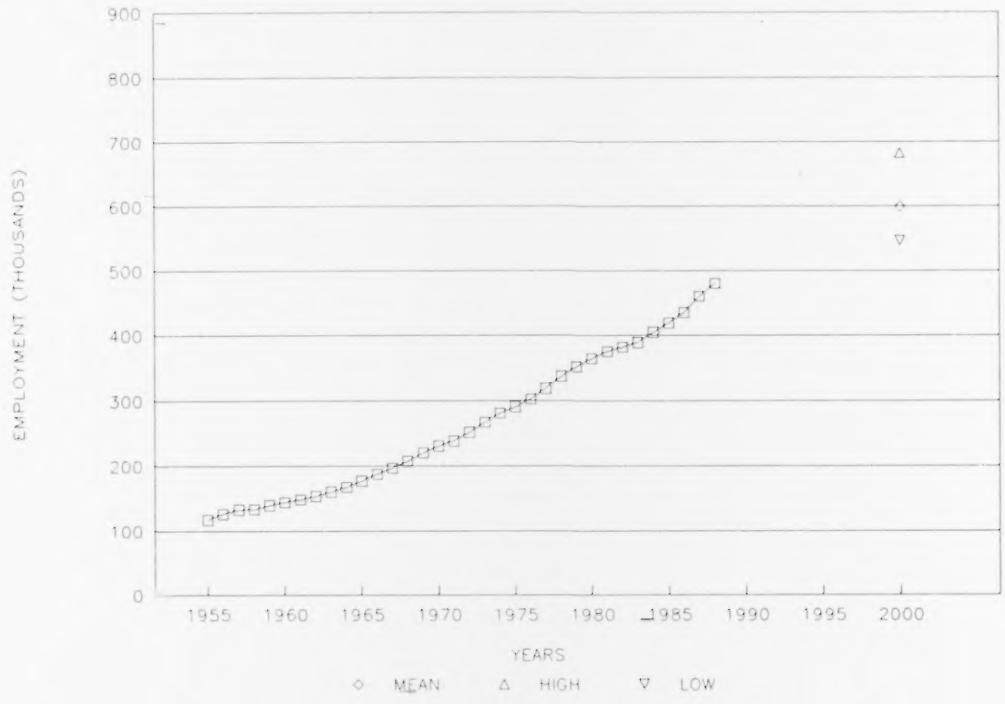
Graph 2.19 Finance, Insurance and Real Estate -- SIC 60-67



Finance, Insurance and Real Estate - This industry includes banks, credit agencies, stock brokers, investment firms, insurance carriers, and sales and real estate.

"Stability of growth" best describe this industry's employment history. Starting with 38,200 employees in 1955, this industry grew to 118,000 by 1988, and the industry is projected to grow to 141,000 by the year 2000.

Graph 2.20 Services and Miscellaneous -- SIC 70-89

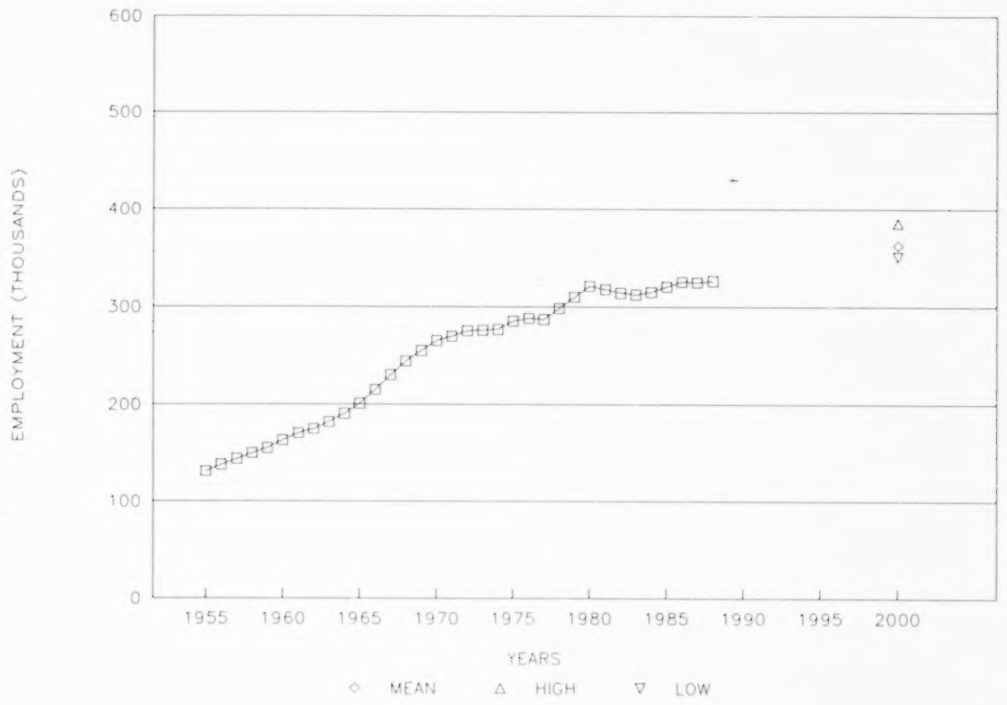


Services and Miscellaneous - This industrial group includes hotels and lodging places; personal services such as beauty shops, business services, automobile and other repair services; amusement and recreation services; health services; legal and educational services; social services; membership organizations; museums, zoos, art galleries; other professional services; and domestic services in private households.

This industry's employment is expected to surpass manufacturing employment by the year 2000, as the population's demand for services rises.

Service employment has grown from 117,100 in 1955 to 479,500 in 1988 and is projected to grow to 599,400 in the year 2000.

Graph 2.21 Federal, State and Local Government



Federal, State and Local Government includes all industry owned by the public. Public administration is just one of these industries.

Government includes the executive and legislative offices, the courts, correctional institutions, and police and fire protection, public finance, the administration of human services, economic and environmental programs and national security and international affairs. It also includes industries that are publicly owned such as education, public utilities, public employment agencies, public health facilities and maintenance of streets and highways.

Employment for those working in the public sector, including education, has been virtually flat since 1980, but by the year 2000 it is projected to grow to 363,000 people, an increase of 11.3 percent. More than half the total employment is in local government, and that is where the greatest growth is expected.

Chapter 3 Industries and Occupations

There are many ways to view Wisconsin's labor force and economy. This report, **Wisconsin Projections 1988-2000**, presents three major aspects of Wisconsin in the decade of the 1990s: the population and labor force, the mix of industries, and the wide range of occupations. Though it is interesting to look at each of these facets separately, it is also useful to look at the ways in which the factors relate to each other. Labor force is dependent on the basic population; the mix of industries in the economy is based on natural and human resources and the consumer demand of the population; occupations in the economy depend on the kinds of industries.

The methodology for creating these projections (see Appendix) also points out these relationships. The growth of employment in an occupation depends both on the growth of total employment in the industry and the change in the pattern of employment of the occupation in the industry. As an example, in estimating the demand for registered nurses, the projection process takes into account both the large growth in the health care industry as well as the slower growth in manufacturing which employs a small number of registered nurses.

The inter-relationship among different parts of the economy is frequently hidden by the way that the statistics are presented. Labor force data are presented separately from industry employment and from occupational employment. Fortunately, it is possible to make the inter-relations explicit. The tables in this chapter show how occupations are employed in industries and how occupations are employed throughout the economy.

Each industry employs its own mix of occupations. Some occupations, for example, secretaries, are common in almost all industries. A few occupations are found in only one industry, for example cannery workers in food processing. Many occupations are concentrated in one industry, but may be scattered in others. Registered nurses, of course, are employed in health care establishments, but also are found in educational institutions and manufacturing plants.

Knowing the different occupations employed in a particular industry may be as useful as knowing the industries which employ a given occupation. A person laid off from one plant may look for related occupations in different industries and may turn up an unexpected job possibility. Career counselors might explore options among several occupations in a given industry in their locale.

Below are listed Wisconsin's nine largest industries, with the occupations with largest employment in each industry. Employment in these nine industries represents 42.0 percent of total occupational employment in 1988. These are industries and occupations which will employ a large number of Wisconsin workers.

SIC 20: Food and Kindred Products

1988 Employment: 62,500

Occupations:	Other Machinery Set-up, Operators & Tenders	13,040
	Other Hand Workers & Assemblers	6,460
	Packaging & Filling Machine Operator	4,840
	All Other Helper, Laborer, Mover	4,150
	Hand Packers & Packagers	4,040
	Meat, Poultry & Fish Cutters	3,280
	Industrial Machinery Mechanics	2,990
	Dairy Processing Equipment Operator	2,870
	Cannery Workers	2,850
	All Other Hand Material Movers	1,170

The ten largest occupations in the manufacturing of food and kindred products are a mix of industry specific occupations and occupations which will be found in other industries as well. Clearly, cannery workers are likely to be found only in food processing businesses, while hand packers and machinery set-up operators are employed in other industries.

No growth is expected in the food manufacturing and processing industry in Wisconsin. Increased employment in these occupations probably will be due to increases in other industries.

SIC 35: Machinery, except Electrical

1988 Employment: 107,300

Occupations:	All Other Assemblers, Fabricator	7,150
	Blue Collar Worker Supervisors	4,290
	First Line Supervisor, Production	3,690
	Tool and Die Makers	3,630
	Welders and Cutters	3,300
	Commodity Sales	2,730
	Electrical, Electronic Assembler	2,730
	General Managers and Top Executives	2,500
	Metal Fabricating Setters & Operators	2,460
	Lathe Turning Machine, Setter Operator	2,210

The Industrial Machinery and Equipment industry manufactures machines, equipment, and computers for other manufacturing industries. The major occupations in this industry also are found in other manufacturing industries.

Many of these occupations are subject to changing technologies and therefore may require new kinds of training and retraining. Those most skilled in their present jobs are often selected for retraining. For example, machine operators that understand blueprints, metals, and calculating fine tolerances have skills important to learning computer controlled machining.

Job openings in these occupations are likely to be a result of people leaving the labor force. There is still a need for workers in these occupations, but the need does not come from new growth in the industries which employ them.

SIC 50: Wholesale Trade-Durable Goods

1988 Employment: 59,400

Occupations:	Other Sales Representatives, Except Retail	6,300
	General Managers & Top Executives	4,410
	Salespersons, Parts	3,040
	Sales Representatives, Scientific Products	2,870
	Farm Equipment Mechanics	2,550
	General Office Clerks	2,420
	Secretaries	2,190
	Bookkeeping & Accounting & Auditing	2,140
	Salespersons, Retail	1,920
	Truck Drivers, Light	1,560

Persons employed in the Wholesale Trade industry are primarily engaged in selling durable goods products to retailers. The major occupations in this industry reflect the importance of sales, from the sales representatives to the parts salespersons. Most of the other, non-sales occupations, are support positions common in most industries.

Farm equipment mechanics appear in the Wholesale Trade industry because farm implement dealers are considered to be engaged in wholesale trade rather than retail trade.

There is an expected growth of 15.9 percent in the Wholesale Trade-Durable Goods industry by the year 2000.

SIC 54: Food Stores

1988 Employment: 57,600

Occupations:	Cashiers	17,910
	Stock Clerks, Sales Floor	10,810
	General Managers & Top Executives	3,650
	Butchers & Meat Cutters	3,500
	Bakers, Bread & Pastry	3,010
	Salespersons, Retail	2,490
	Food Preparation Workers	2,110
	Wholesale, Retail Buyers, Except Farm	1,580
	Stock Clerks, Stockroom or Warehouse	1,480
	Food Preparation & Service, Fast Food	1,290

The largest occupations in Food Stores are, predictably, cashiers and stock clerks. These occupations are generally part-time, and low paying and are frequently first jobs for young workers. The presence of food preparation workers and servers indicates the presence of delicatessen and carry out services in food stores.

There is a projected growth of 19.0 percent to the year 2000 for food stores. Because of the smaller teenage labor force, competition for workers will continue to increase wages and benefits.

SIC 58: Eating and Drinking Places

1988 Employment: 142,800

Occupations:		
	Waiters & Waitresses	37,420
	Bartenders	23,580
	Food Preparation & Service Fast Food	11,720
	Cooks, Fast Food	9,730
	Cooks, Restaurant	9,190
	Dining Room & Bartender Helpers	8,220
	Food Preparation Workers	7,410
	All Other Service Supervisors	3,780
	Food Service & Lodging Managers	3,730
	Counter Attendants	3,510

Employment in Wisconsin Eating and Drinking Places is expected to increase by 22.4 percent by the year 2000. There will be continued high demand for the occupations in this growing industry. The high demand for workers also comes from high separation rates for these occupations. In the past decade many workers in eating and drinking places have been young people, employed in their first jobs. The smaller number of young workers has already created persistent vacancies, especially in fast food establishments.

Most of these occupations do not require a large amount of training, making them available to first-time workers or to others not able to get training for other jobs.

SIC 73: Miscellaneous Business Services

1988 Employment: 81,700

Occupations:		
	Janitors & Cleaners	9,160
	Guards	5,510
	All Other Helpers, Laborers, Movers	4,690
	General Office Clerks	3,590
	General Managers & Top Executives	3,200
	Secretaries	2,260
	Maids & Housekeeping Cleaners	2,070
	All Other Clerical & Administrative Support	1,820
	Data Entry Keyers, Ex. Composing	1,820
	Computer Programmers	1,710
	Home Health Aides	1,660

The Business Services industry is one of the fastest growing industries, with a projected growth of 36.2 percent by 2000. Establishments in this industry are engaged in providing services to other business establishments on a contract or fee basis. Such services include advertising, mailing, reproduction, computer programing, cleaning, and providing temporary help. Businesses services are growing because purchasing a service is often easier and cheaper than hiring someone directly. Some employers contract for temporary business services when there is a no layoffs policy for their own employees.

Rapid growth in this industry will add to employment growth in these occupations which are also common in other industries.

SIC 80: Health Services

1988 Employment: 176,120

Occupations:		
	Registered Nurses	26,890
	Licensed Practical Nurses	9,130
	Physicians	6,260
	Maids & Housekeeping Cleaners	5,610
	Receptionist, Information Clerks	5,550
	General Office Clerks	4,360
	Medical Secretaries	3,970
	Dental Assistants	3,970
	Medical & Clinical Laboratory Technicians	3,030
	Dentists	2,130

The demand for health services continues to keep the industry growing. Employment is projected to increase 28.8 percent, to 226,860, by 2000. This is an industry which employs both highly trained, specialized workers, as well as workers who need little training. Health services is a labor-intensive industry. It provides service day and night, seven days a week. Though the industry employs many people, some of its night shift, weekend and holiday jobs may be hard to fill.

SIC 82: Educational Services

1988 Employment: 186,700

Occupations:		
	Teachers, Secondary School	30,360
	Teachers, Elementary	27,010
	Janitors and Cleaners	9,740
	Secretaries	8,430
	Teachers, Special Education	7,240
	Teachers Aides, Paraprofessional	6,360
	Cooks, Institution or Cafeteria	4,730
	Education Administrators	4,030
	All Other Teachers, Instructors	3,700
	Instructors, Nonvocational Education	3,150

The Educational Services industry is projected to grow 13.3 percent to 2000, about the average rate for all industries. This growth rate reflects the increase in the elementary aged students as a result of the baby boom echo. The large number of special education teachers reflects legislated mandates to teach students with special needs in the school setting. Instructors in non-vocational education are teachers of out-of-school youth and adults in such subjects as self-improvement, basic education, art, drama, music, flying, automobile driving, etc. These instructors in this list will be affiliated with an educational institution.

The non-teaching occupations on the list indicate the range of supporting personnel required to maintain the educational system.

SIC 93: Local Government

1988 Employment: 99,540

Occupations:	Nursing Aides & Orderlies	7,010
	Police Patrol Officers	6,020
	Highway Maintenance Workers	5,580
	Government Chief Executives & Legislators	5,100
	Fire Fighters	4,540
	Registered Nurses	2,430
	All other Helpers, Laborers, Movers	2,350
	All Other Cleaning & Building Service	2,230
	Secretaries	2,130
	Recreation Workers	1,620

Local Government includes county and city governments and independently established special purpose districts. These most common occupations show the range of services provided by local governments. Growth in local government employment is expected to be only 8.7 percent by the year 2000, slower than the average for all industries.

Chapter 4 Occupational Trends

- ✓ **32% of total employment in Wisconsin will come from 20 occupations.**
- ✓ **39% of the total annual job openings will come from occupations common in the economy.**
- ✓ **726 occupations will provide 2,637,510 jobs.**
- ✓ **Medical related occupations show the strongest growth trends.**
- ✓ **Service occupations include a diverse mixture of jobs.**

The Wisconsin economy will benefit from the 107,755 projected annual job openings to the year 2000. Replacement of workers who leave the labor force will provide 81,563 of the total projected annual job openings, while job growth will contribute 26,192 new jobs.

Technology, education, labor force trends are but three factors that individually and collectively affect changes in the nature of the job skills requirements. The projection numbers cannot tell the reader about changes occurring within an occupation. The numbers can tell the reader that employment is going up or down, and by what percentage or number. When an occupation is common to several industries, then knowing which industries are growing or declining can help the person search for the industry most likely to provide stable employment.

Annual openings and separations are two ways of looking at employment projections. Each special table, in this chapter, provides a different insight into the employment projections. Starting with these tables readers can apply other factors, such as personal interests, educational requirements, technological, social or economic trends to find possible career choices. For instance employment growth related to the medical field stands out above the rest of the growth occupations. Growth for nurses, therapists, technicians and technologists, aides and orderlies, medical secretaries, and home service workers reflects a combination of social and technological trends. Most of the medical occupations require training beyond high school, and most of them can be found in communities throughout Wisconsin. The nature and variety of the medical related occupations are attractive for young entrants, career changers, and retirees who seek part-time, people-helping employment.

While the special tables display occupational titles, an analysis of the relationship of the occupations listed in the special tables to the appropriate major category reveals some interesting trends or patterns. Below is a summary of select major occupation categories and the related occupations taken from the special tables.

Professional, Paraprofessional and Technical. Occupations associated with the medical field stand out. Technicians and technologists, registered nurses, LPN'S, occupational and physical therapists, and home services aides are from the tables that are either the fastest growing occupations or adding the most new jobs.

Many occupational titles found in the special

tables are familiar ones. However, technological advances in the medical field are giving rise to occupational titles ending in technologist and technician. Although there is a fine line between the two, occupational titles ending in technologyist can require two to four or more years of additional post-secondary education, while the training requirements for technicians may be on-the-job training or up to two years academic training. Occupations that will increase employment levels the fastest are technicians and technologists. Much of the growth will be seen in the medical services industries.

Another up-and-coming group of occupations is composed of computer programmers, computer program aides and computer systems analysts. High employment growth reflects continued integration of computers into business operations. These three occupations require post-secondary education.

Service occupations. Most of these 23,635 annual job openings will occur because workers leave the labor force for one reason or another.

The growth in these occupations reflects changing lifestyle and demographic trends rather than technological trends. Growth is projected for hairdresser/ cosmetologists, bartenders, medical assistants, home health aides, social welfare service aides, corrections officers, food prep workers, janitors and cleaners, waiters and waitresses, maids and housekeepers, and guards. These jobs require either on the job or academic training, and are found in communities throughout Wisconsin.

Barbering is the only service occupation showing a decline in projected employment levels. This downward trend could be due in part to a shift from barbering apprenticeships to hairdressers/ cosmetologists and not an actual decline in the need for persons cutting hair.

Executive, Administrative, and Managerial occupations. General managers and top executives will be needed throughout most industries, and generally acquire their positions with a combination of educational degrees and experience.

Administrative Support occupations. Growth and separations will provide 14,373 jobs annually. A closer look at specific job titles shows some are not growing. Typists; word processing typists; stenographers; bill, posting and calculating machine operators; and utility meter readers are projecting fewer jobs. Fewer jobs for these five particular occupational titles may be a reflection of changes taking place within the nature of the job environment and not necessarily a decline in need. Over time a job title fades through disuse, while newer related titles appear to grow. A full listing of administrative support occupations can be found in Table 4.8 on page 57.

Agriculture Services occupations. A 17.5 percent change in employment levels is expected in these occupations. They include the well-known farm and logging occupations, plus the little-known occupation of gardening and groundskeepers. This latter occupation is on the rise as businesses from all industries have need for maintenance and care of business lawns, shrubs and flowers. Some businesses hire staff, while other businesses contract for this service.

Precision Production, Craft and Repair; and Operators, Fabricators and Laborers are two major groups primarily found in manufacturing industries. Craft and repair and laborers are found in several other industries. While there are 18 individual occupations listed in the special tables, 14 of these occupations may be affected most by automated, computerized and integrated manufacturing. To a lesser degree, a decline in hand assembly jobs may be a reflection of the trend toward lowering product costs by shifting some hand operations to other countries.

Not surprising is the growth of data processing repair workers. As the use of data processing equipment rises, repair workers will be needed to maintain and repair the equipment.

Self-Employment occupations. These occupations show a broad range of opportunities where an individual can manage his or her own business. The trend toward self-employment continues as an increasing number of experienced workers seek career and lifestyle changes.

Occupational employment levels were derived from the industry employment figures and like industry employment, are a count of the number of jobs being worked by people, not the number of people working.

Occupations, like industries, are grouped into major classifications. These projections are presented according to the occupational employment statistics scheme. Table 4.1 lists the eight major occupational categories. Table 4.8 lists the occupational titles grouped under each major category.

Labor force separation numbers result from the number of people who for one reason or another no longer work and leave the labor force minus those returning to the labor force.

Detailed occupational employment numbers are obtained from sample surveys of businesses within industries. The industry surveys include occupational employment information. Although there are many more occupational titles evident in the labor market, only those titles included on the returned surveys are included here.

Key Concepts

- ✓ ***Greatest Expected Employment*** (Table 4.2) ranks the occupations by those occupations expected to have the highest employment levels in the year 2000.
- ✓ ***Fastest Growing*** (Table 4.3) occupations are determined by the percent change between the base year and the projected year. The occupations which grow by the greatest percent start with a small number of people employed in the base year, but experience significant growth. The fastest growing occupations may not add a large number of new jobs to the labor force. Only occupations employing at least 600 were included.
- ✓ ***Most Job Openings*** (Table 4.4) is derived by adding annual projected growth to annual projected separations. Relationships between job creations (growth) and replacement needs (separations) are easily seen.
- ✓ ***Adding the Most Jobs*** (Table 4.5) shows the numeric difference between the base year 1988 and the projected year 2000. The number tells what the projected growth is likely to be for an occupation.
- ✓ ***Fastest Declining Occupations*** (Table 4.6) is a percent change from the base year 1988 to the projected year 2000. These are the occupations that are expected to have fewer employees in the year 2000. But, replacement needs may offer employment opportunity. Only occupations employing at least 600 were included.
- ✓ ***Greatest Self-Employment*** (Table 4.7) are the occupations in which people work for themselves, rather than for somebody else.

Table 4.1 Employment by Major Occupational Category Wisconsin 1988 to 2000

Occupational Titles	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Grow	Sep	Total
Total, All Occupations	2,323,520	2,637,510	313,900	13.5	26,192	81,563	107,755
Exec., Admin. & Managerial Occ.	167,830	197,200	29,360	17.5	2,448	7,435	9,883
Prof., Paraprofessional, Tech. Occ.	426,970	515,600	88,620	20.8	7,396	13,079	20,475
Marketing & Sales Occ.	244,190	280,910	36,720	15.0	3,061	10,644	13,705
Admin. Support Occupations, Clerical	358,980	396,130	37,150	10.4	3,096	11,277	14,373
Service Occupations	396,500	473,580	77,080	19.4	6,426	17,209	23,635
Agriculture Services	21,000	24,660	3,670	17.5	305	1,197	1,502
Precision Prod., Craft and Repair	263,580	291,390	27,816	10.6	2,325	8,824	11,149
Operators, Fabricators & Laborers	444,480	458,050	13,570	3.1	1,135	11,898	13,033

Note: Totals may not add due to rounding.

Graph 4.1 Wisconsin Occupational Projections

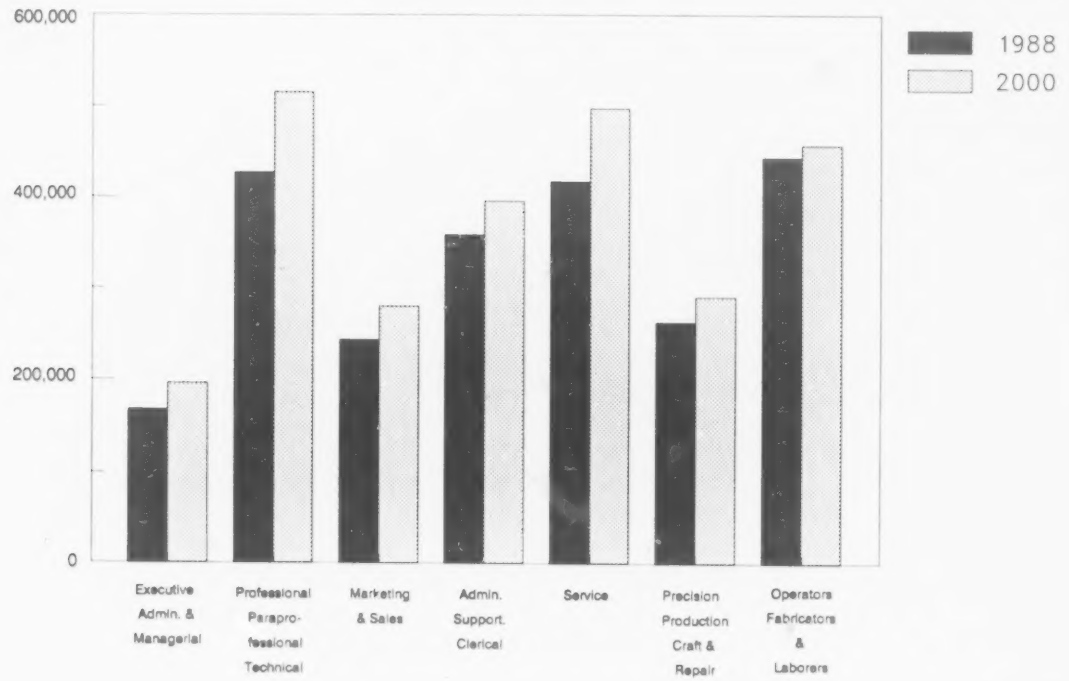


Table 4.2 Occupations With the Greatest Expected Employment in 2000

Occupational Title	Estimated Employment 1988	2000	Percent Change
Salespersons, Retail	71,177	83,852	17.8%
General Managers and Top Executives	61,064	69,878	14.4%
Waiters and Waitresses	45,856	58,266	27.1%
General Office Clerks	48,382	56,471	16.7%
Janitors and Cleaners	44,834	50,584	12.8%
Secretaries	42,762	46,665	9.1%
Cashiers	41,159	45,651	10.9%
Nursing Aides and Orderlies	36,451	44,633	22.4%
Registered Nurses	32,976	43,183	31.0%
Bookkeeping & Accounting & Auditing	42,924	42,767	-0.4%
Truck Drivers, Heavy	36,870	40,399	9.6%
Other Sales Reps., Exc. Retail	36,043	38,784	7.6%
Teachers, Secondary School	30,360	36,160	19.1%
Bartenders	29,576	35,183	19.0%
Teachers, Elementary	27,945	31,503	12.7%
Stock Clerks, Sales Floor	22,874	26,237	14.7%
Maintenance Repairers, Gen. Util.	22,152	26,206	18.3%
Hairdressers and Cosmetologists	21,784	24,146	10.8%
Food Preparation Workers	20,100	23,799	18.4%
Truck Drivers, Light	19,073	22,544	18.2%

Source: DILHR, Labor Market Information Bureau, 1991

Table 4.3 Fastest Growing Occupations with 600+ Employment

Occupational Title	Estimated Employment 1988	2000	Percent Change
Securities, Financial Serv., Sales	3,203	5,559	73.6%
Data Processing Equip. Repairers	888	1,477	66.3%
Paralegals	651	1,042	60.1%
Medical Assistants	2,611	4,151	59.0%
Radiologic Technologists	1,501	2,361	57.3%
Home Health Aides	7,803	12,134	55.5%
Computer Systems Analysts	6,933	10,576	52.5%
Therapists	1,078	1,629	51.1%
Radiologic Technicians	1,087	1,642	51.1%
Medical Records Tech. and Technol.	1,110	1,659	49.5%
Surgical Technicians	937	1,398	49.2%
Occupational Therapists	917	1,366	49.0%
Computger Programmer Aides	1,658	2,441	47.2%
Social Welfare Service Aides	2,180	3,211	47.3%
Medical Secretaries	4,000	5,847	46.2%
Computer Programmers	6,347	9,156	44.3%
Physical Therapists	1,452	2,091	44.0%
Electrical & Electronic Tech.	3,891	5,510	41.6%
Correction Officers and Jailers	2,503	3,546	41.7%
Home Services Workers	3,417	4,780	39.9%

Source: DILHR, Labor Market Information Bureau, 1991

Table 4.4 Occupations With the Most Job Openings Wisconsin 1988 to 2000

Occupational Title	Annual Growth	Annual Separations	Annual Openings
Salespersons, Retail	1,056	3,837	4,893
Janitors and Cleaners	479	3,435	3,914
General Managers and Top Exec.	735	2,704	3,439
General Office Clerks	674	1,982	2,656
Nursing Aides and Orderlies	682	1,338	2,020
Bartenders	467	1,350	1,817
Maids and Housekeeping Cleaners	319	1,477	1,796
Bookkeeping & Account & Auditing	-13	1,778	1,765
Registered Nurses	851	910	1,761
Secretaries	325	1,422	1,747
Other Sales Reps., Exc. Retail	228	1,515	1,743
Waiters and Waitresses	1,034	666	1,700
Stock Clerks, Sales Floor	280	1,176	1,456
Cashiers	374	1,011	1,385
Truck Drivers, Heavy	294	939	1,233
Food Preparation Workers	308	924	1,232
Maintenance Repairers, Gen. Util.	338	832	1,170
Teachers, Secondary School	483	655	1,138
Guards	200	916	1,116
Gardeners and Groundskeepers	228	881	1,109

Source: DILHR, Labor Market Information Bureau, 1991

Table 4.5 Occupations Adding the Most Jobs From 1988 to 2000

Occupational Title	Estimated Employment 1988	2000	Numeric Growth
Salespersons, Retail	71,177	83,852	12,675
Waiters and Waitresses	45,856	58,266	12,410
Registered Nurses	32,976	43,183	10,207
General Managers and Top Exec.	61,064	69,878	8,814
Nursing Aides and Orderlies	36,451	44,633	8,182
General Office Clerks	48,382	56,471	8,089
Teachers, Secondary School	30,360	36,160	5,800
Janitors and Cleaners	44,834	50,584	5,750
Bartenders	29,576	35,183	5,607
Receptionists, Information Clerks	15,581	20,420	4,839
Cashiers	41,159	45,651	4,492
Home Health Aides	7,803	12,134	4,331
Maintenance Repairers, Gen. Util.	22,152	26,206	4,054
Secretaries	42,762	46,665	3,903
Maids and Housekeeping Cleaners	18,292	22,118	3,826
Food Preparation Workers	20,100	23,799	3,699
Computer Systems Analysts	6,933	10,576	3,643
Licensed Practical Nurses	12,005	15,603	3,598
Teachers, Elementary	27,945	31,503	3,558
Truck Drivers, Heavy	36,870	40,399	3,529

Source: DILHR, Labor Market Information Bureau, 1991

Table 4.6 Fastest Declining Occupations With 500+ Employment

Occupational Title	Estimated Employment 1988	2000	Percent Change
Elec., Electronic Assembler Prec.	3,137	1,976	-37.0%
Elec., Electronic Assembler, Other	9,357	6,064	-35.2%
Barbers	2,081	1,366	-34.4%
Telephone & Cable TV Instal./Repair	2,217	1,730	-22.0%
Central Office & PBX Instal./Repair	1,110	870	-21.6%
Stenographers	1,926	1,528	-20.7%
Painters, Transportation Equip.	671	548	-18.3%
Foundry Mold Assembly/Shakeout	975	816	-16.3%
Metal Pourers, Basic Shapes	724	607	-16.2%
Textile Machine Operators	913	769	-15.8%
Typists	10,923	9,425	-13.7%
Grinding and Polishing, Hand	4,150	3,597	-13.3%
Typists, Word Processing Equip.	5,391	4,698	-12.9%
Bill, Post, Calculate Mach Oper.	1,878	1,647	-12.3%
Hand Packers And Packagers	19,237	17,085	-11.2%
Meter Readers, Utilities	967	864	-10.7%
Cementing and Gluing Machine Oper.	1,436	1,300	-9.5%
Cutting and Slicing Setter/Oper.	687	625	-9.0%
Welding Machine Setter/Operator	2,822	2,580	-8.6%
Machine Assemblers	2,495	2,284	-8.5%

Source: DILHR, Labor Market Information Bureau, 1991

Table 4.7 Occupations With the Greatest Self-Employment by the Year 2000
Wisconsin Occupations With 1,900+ Self-Employment

Occupational Title	Self Employment 1988	Self Employment 2000	Percent 2000 Employment	Percent Change 1988-2000
Hairdressers and Cosmetologists	10,940	12,240	6.7%	11.9%
Other Sales Reps. Exc. Retail	11,560	11,210	6.1%	-3.0%
Child Care Workers	8,280	9,880	5.4%	19.3%
Carpenters	6,510	7,320	4.0%	12.4%
Instructors, Nonvocational Educ.	4,180	4,710	2.6%	12.7%
Food Service and Lodging Managers	4,240	4,710	2.6%	11.1%
Truck Drivers, Heavy	4,910	4,670	2.5%	-4.9%
Lawyers	3,550	3,660	2.0%	3.1%
Automotive Mechanics	3,490	3,330	1.8%	-4.6%
Maids and Housekeeping Cleaners	2,200	3,320	1.8%	50.9%
Vendors, Solicitors, Door-To-Door	3,280	3,300	1.8%	0.6%
First Line Supervisors, Sales	3,290	3,270	1.8%	-0.6%
Salespersons, Retail	3,140	2,940	1.6%	-6.4%
Painters and Paperhangers	2,560	2,780	1.5%	8.6%
Gardeners and Groundskeepers	2,130	2,630	1.4%	23.5%
Bookkeeping & Accounting & Auditing	2,550	2,560	1.4%	0.4%
Insurance Sales Workers	2,070	2,460	1.3%	18.8%
Artists and Commercial Artists	1,930	2,380	1.3%	23.3%
Physicians	2,240	2,260	1.2%	0.9%
Dentists	2,360	2,240	1.2%	-5.1%

Source: DILHR, Labor Market Information Bureau, 1991

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Total, All Occupations	2,323,520	2,637,510	313,991	13.5	26,192	81,563	107,755
Exe., Admin., & Managerial Occ.	**167,830**	**197,200**	**29,363**	**17.5**	**2,448**	**7,435**	**9,883**
Managerial & Administrative Occ.	167,830	197,200	29,363	17.5	2,448	7,435	9,883
Financial Managers	11,240	13,650	2,411	21.5	201	356	557
Personnel,Training, Labor Rel. Mgr.	2,910	3,530	623	21.4	52	101	153
Purchasing Managers	6,220	7,140	920	14.8	77	193	270
Marketing, Adv., Public Rel. Mgrs.	7,730	9,530	1,804	23.4	150	238	388
Administrative Service Managers	2,880	3,620	739	25.7	62	134	196
Engineer., Math., Nat. Sci. Mgr.	4,650	6,110	1,464	31.5	122	222	344
Postmasters, Mail Superintendent	910	980	66	7.2	6	68	74
Education Administrators	4,740	5,620	875	18.5	73	195	268
Medicine and Health Serv. Mgrs.	2,810	3,540	736	26.2	61	113	174
Property and Real Estate Managers	2,350	2,880	526	22.4	44	247	291
Industrial Production Managers	6,410	7,960	1,550	24.2	129	297	426
Construction Managers	2,660	3,180	514	19.3	43	121	164
Mining and Related Managers	60	60	1	1.6	0	3	3
Communication, Transp., Util. Mgrs.	2,850	3,240	387	13.6	32	126	158
Food Service and Lodging Managers	9,890	12,320	2,425	24.5	202	459	661
Gvmt. Chief Exec. and Legislators	5,250	5,480	237	4.5	20	377	397
General Managers and Top Exec.	61,060	69,880	8,814	14.4	735	2,704	3,439
All Other Managers and Administ.	33,210	38,490	5,271	15.9	439	1,481	1,920
Professional, Paraprofess., Tech.	**426,970**	**515,600**	**88,624**	**20.8**	**7,396**	**13,079**	**20,475**
Management Support Occupations	26,650	33,100	6,453	24.2	538	832	1,370
Underwriters	2,320	3,090	778	33.6	65	46	111
Credit Analysts	480	650	172	35.7	14	15	29
Loan Officers and Counselors	3,950	5,290	1,341	33.9	112	148	260
Tax Preparers	1,120	1,520	394	35.1	33	42	75
Accountants and Auditors	15,920	19,210	3,283	20.6	274	481	755
Budget Analysts	920	1,060	147	16.0	12	32	44
All Other Financial Specialists	1,940	2,280	338	17.5	28	68	96
Purchasing Agents and Buyers	9,670	11,080	1,413	14.6	118	422	540
Wholesale, Retail Buyers, Ex. Farm	5,270	5,910	635	12.0	53	230	283
Purchasing Agents and Buyers, Farm	660	740	82	12.5	7	58	65
Pur. Agent Ex. Whls./Retail/Farm	3,740	4,440	696	18.6	58	134	192
Personnel Specialists and Related	8,940	11,560	2,619	29.3	218	216	434
Claims Takers, Unemployment Benefits	150	160	14	9.6	1	3	4
Special Agents, Insurance	360	430	67	18.7	6	8	14
Employment Interviewers	2,410	3,080	663	27.5	55	58	113
Personnel, Train., Labor Rel. Spec.	6,020	7,900	1,875	31.1	156	147	303
All Other Management Support Occup.	14,270	16,300	2,025	14.2	170	384	554
Cost Estimators	3,810	4,350	536	14.1	45	61	106
Management Analysts	430	640	216	50.5	18	45	63

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Construction, Building Inspector	740	830	85	11.5	7	45	52
Inspectors and Compliance Officers	1,690	1,900	210	12.5	18	60	78
Tax Exam., Collector, Revenue Agent	1,000	1,070	71	7.1	6	35	41
Assessors	1,160	1,270	107	9.2	9	41	50
Claims Examiners, Insurance	430	560	138	32.4	12	17	29
All Other Management Support Wkrs.	5,020	5,680	662	13.2	55	80	135
Engineers, Architects, Surveyors	38,070	44,790	6,715	17.6	561	895	1,456
Engineers	16,800	20,250	3,450	20.5	288	492	780
Aeronautical and Astro. Engineers	*	*	*	*	*	*	*
Metallurgists and Rel. Engineers	290	320	32	11.2	3	8	11
Mining Engineers, Including Safety	20	20	0	0.0	0	1	1
Petroleum Engineers	*	*	*	*	*	*	*
Chemical Engineers	400	490	89	22.3	7	10	17
Nuclear Engineers	60	60	7	12.3	1	2	3
Civil Engineers, Including Traffic	2,350	2,690	337	14.3	28	51	79
Agricultural Engineers	180	180	5	2.8	0	1	1
Electrical and Electronic Engineer	3,560	4,920	1,364	38.3	114	95	209
Industrial Engineers, Exc. Safety	2,320	2,760	440	19.0	37	63	100
Safety Engineers, Except Mining	360	420	64	17.9	5	10	15
Mechanical Engineers	4,930	5,910	975	19.8	81	181	262
Marine Engineers	20	20	-3	-12.5	0	0	0
All Other Engineers	2,320	2,460	140	6.0	12	70	82
Architects and Surveyors	1,470	1,680	209	14.2	18	46	64
Architects, Exc. Land. and Marine	860	1,020	157	18.2	13	32	45
Marine Architects	20	20	4	23.5	0	0	0
Landscape Architects	30	30	6	21.4	1	1	2
Surveying and Mapping Scientists	560	600	42	7.5	4	13	17
Engineering Technicians	19,800	22,850	3,056	15.4	255	357	612
Civil Engineering Technicians	1,310	1,470	157	12.0	13	29	42
Electrical and Electronic Techn.	3,890	5,510	1,619	41.6	135	51	186
Industrial Engineering Techn.	690	740	44	6.4	4	13	17
Mechanical Engineering Techn.	1,430	1,640	216	15.2	18	46	64
Drafters	7,740	8,440	702	9.1	59	125	184
Estimators and Drafters, Utilities	130	130	0	0.0	0	2	2
Surveying and Mapping Technician	730	780	50	6.8	4	6	10
All Other Engineering Technician	3,870	4,140	268	6.9	22	85	107
Natural, Computer, Math Scientists	9,350	10,670	1,318	14.1	110	221	331
Physical Scientists	2,250	2,740	490	21.8	41	62	103
Physicists and Astronomers	20	30	5	20.8	0	0	0
Chemists	860	1,040	184	21.4	15	16	31
Atmospheric and Space Scientists	30	40	10	38.5	1	0	1
Geologist, Geophysicist, Oceanog.	100	120	20	20.0	2	2	4
All Other Physical Scientists	1,240	1,510	271	21.9	23	44	67

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Life Scientists	3,900	4,410	508	13.0	42	101	143
Forester, Conservation Scientist	750	810	62	8.3	5	14	19
Agricultural and Food Scientists	300	350	50	16.5	4	5	9
Biological Scientists	400	480	77	19.4	6	2	8
Medical Scientists	70	90	18	24.3	2	0	2
All Other Life Scientists	2,380	2,680	301	12.7	25	80	105
Phys. and Life Science Technicians	3,210	3,530	320	10.0	27	58	85
Biological, Agric., Food Techn.	660	720	64	9.8	5	19	24
Chemical Technicians, Exc. Health	1,250	1,360	102	8.1	9	21	30
All Other Science Technicians	1,300	1,450	154	11.9	13	18	31
Computer and Mathematical Occ.	16,480	24,350	7,864	47.7	656	121	777
Computer and Related Occupations	15,260	22,610	7,347	48.1	612	85	697
Computer Systems Analysts	6,930	10,580	3,643	52.6	304	34	338
Computer Programmers	6,350	9,160	2,809	44.3	234	37	271
Computer Programmer Aides	1,660	2,440	783	47.2	65	10	75
Programmers: Numerical, Tool	320	440	112	34.7	9	4	13
Computer, Math, and Research Analyst	1,220	1,740	517	42.3	44	36	80
Operations and Research Analysts	390	650	261	66.9	22	15	37
Math Scientists, Actuaries, Statisticians	180	200	20	11.2	2	6	8
Statisticians	150	180	36	24.5	3	7	10
Actuaries	340	500	162	48.4	14	1	15
Financial Analysts, Statistical	160	200	38	24.1	3	7	10
Mathematicians and Math Scientists	*	*	*	*	*	*	*
Mathematical Technicians	*	*	*	*	*	*	*
Social Scientists, Recr., Religion	25,450	30,630	5,182	20.4	432	1,150	1,582
Social Scientists	3,240	3,820	574	17.7	48	61	109
Economists	340	390	50	14.8	4	8	12
Urban and Regional Planners	290	330	39	13.4	3	2	5
Psychologists	2,090	2,490	407	19.5	34	39	73
All Other Social Scientists	530	610	78	14.8	7	12	19
Social, Recreation, Religion Workers	22,200	26,810	4,608	20.8	384	1,089	1,473
Social Wkr., Medical and Psychiatric	3,270	4,280	1,012	31.0	84	93	177
Social Wkrs., Ex. Medical and Psych.	5,200	6,380	1,180	22.7	98	143	241
Human Services Workers	3,420	4,780	1,363	39.9	114	101	215
Recreation Workers	3,410	3,960	549	16.1	46	139	185
Clergy	4,850	5,200	344	7.1	29	401	430
Directors, Religious Activ./Educ.	1,430	1,570	134	9.4	11	149	160
All Other Religious Workers	620	650	26	4.2	2	63	65
Law and Related Occupations	12,340	15,630	3,284	26.6	274	811	1,085
Lawyers and Judicial Workers	9,820	12,240	2,424	24.7	202	663	865
Judges and Magistrates	530	580	48	9.0	4	56	60
Adjudicators and Hearing Officers	20	20	2	9.1	0	2	2
Lawyers	9,270	11,640	2,374	25.6	198	605	803

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Legal Assistants and Technicians	2,520	3,380	860	34.1	72	148	220
Law Clerks	370	480	106	28.5	9	21	30
Paralegals	650	1,040	391	60.1	33	42	75
Title Searchers	180	240	61	33.9	5	11	16
Title Examiners and Abstractors	810	1,070	262	32.5	22	47	69
All Other Legal Assistants	510	550	40	7.8	3	27	30
Teachers, Librarians, Counselors	129,370	148,830	19,460	15.0	1,624	3,865	5,489
College and University Faculty	18,340	20,820	2,480	13.5	209	660	869
Lecturers	230	320	94	41.8	8	9	17
Nursing Instructors	920	1,080	153	16.6	13	41	54
Graduate Assistants, Teaching	3,000	3,390	390	13.0	33	107	140
Life Science Teachers	1,750	1,970	227	13.0	19	62	81
Chemistry Teachers	390	450	51	12.9	4	14	18
Physics Teachers	260	290	33	12.9	3	9	12
All Other Physical Science Teachers	140	160	18	12.8	2	5	7
Social Science Teachers	1,720	1,940	223	13.0	19	61	80
Health Specialties Teachers	390	450	51	12.9	4	14	18
English & Foreign Language Teachers	1,300	1,470	169	13.0	14	44	58
Art, Drama, and Music Teachers	1,260	1,430	164	13.0	14	45	59
Engineering Teachers	840	940	109	13.1	9	30	39
Mathematical Science Teachers	810	920	106	13.1	9	29	38
Computer Science Teachers	290	320	37	12.9	3	10	13
All Other Post Secondary Teacher	5,040	5,700	655	13.0	55	180	235
Teachers, Preschool, Kind., Elem.	96,060	110,680	14,619	15.2	1,218	2,604	3,822
Teachers, Preschool & Kindergarten	7,170	8,440	1,267	17.7	106	86	192
Teachers, Elementary	27,950	31,500	3,558	12.7	297	758	1,055
Teachers, Secondary School	30,360	36,160	5,800	19.1	483	655	1,138
Teachers, Special Education	7,260	8,380	1,119	15.4	93	202	295
Teachers, Vocational Education	4,380	4,630	256	5.9	21	164	185
Instructors, Nonvocational Education	8,260	9,350	1,091	13.2	91	321	412
Instructors and Coaches, Sports	5,120	6,020	904	17.7	75	203	278
Farm & Home Management Advisors	660	600	-54	-8.2	-5	23	18
All Other Teachers, Instructors	4,910	5,590	678	13.8	57	192	249
Librarians, Archivists, Curators	5,140	5,600	457	8.9	39	267	306
Librarians, Professional	3,270	3,550	283	8.7	24	169	193
Technical Assistants, Library	1,560	1,690	127	8.1	11	81	92
Audio-Visual Specialists	240	270	31	13.1	3	12	15
Curators, Archivists, Museum Tech.	80	90	16	21.3	1	5	6
Educational Support	9,830	11,740	1,904	19.4	158	334	492
Counselors	2,430	3,010	580	23.9	48	49	97
Instructional Coordinators	1,000	1,150	155	15.6	13	39	52
Teachers Aides, Paraprofessional	6,410	7,580	1,169	18.2	97	246	343
Health Practitioners, Technicians	94,040	119,630	25,591	27.2	2,135	2,949	5,084
Health Treating Practitioners	16,430	19,430	2,996	18.2	250	1,144	1,394

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Physicians	9,370	11,240	1,867	19.9	156	584	740
Dentists	4,460	4,800	340	7.6	28	356	384
Optometrists	860	940	73	8.5	6	67	73
Podiatrists	120	150	21	16.9	2	17	19
Veterinarians, Vet. Inspectors	930	1,170	237	25.5	20	46	66
All Other Health Practitioners	680	1,140	458	67.1	38	74	112
Therapists	6,650	9,100	2,446	36.8	204	114	318
Therapists	1,080	1,630	551	51.1	46	43	89
Respiratory Therapists	970	1,280	310	32.1	26	4	30
Occupational Therapists	920	1,370	449	49.0	37	22	59
Physical Therapists	1,450	2,090	639	44.0	53	20	73
Correct. and Manual Arts Therapist	30	40	5	15.2	0	0	0
Speech Pathologists, Audiologists	1,680	2,020	344	20.5	29	15	44
Recreational Therapists	330	420	91	27.7	8	6	14
All Other Therapists	200	260	57	28.4	5	4	9
Health Care Maintenance, Treating	54,050	69,630	15,575	28.8	1,300	1,429	2,729
Registered Nurses	32,980	43,180	10,207	31.0	851	910	1,761
Licensed Practical Nurses	12,010	15,600	3,598	30.0	300	236	536
Emergency Medical Technicians	2,280	2,500	224	9.8	19	38	57
Physician Assistants	1,200	1,440	245	20.5	20	44	64
Opticians, Dispensing and Measuring	1,250	1,480	224	17.9	19	26	45
Pharmacists	3,250	4,080	825	25.4	69	129	198
Dieticians and Nutritionists	880	1,050	174	19.9	15	36	51
Dietetic Technicians	220	300	78	35.1	7	10	17
Health Technicians, Technologists	16,900	21,470	4,574	27.1	381	262	643
Med./Clinical Lab. Technologists	3,220	3,530	308	9.6	26	38	64
Med./Clinical Lab. Technicians	1,410	1,630	221	15.7	18	17	35
Dental Hygienists	2,270	2,540	270	11.9	23	26	49
Medical Records Techn. and Technol.	1,110	1,660	549	49.5	46	33	79
Nuclear Medicine Technologists	230	290	62	27.6	5	3	8
Radiologic Technologists	1,500	2,360	860	57.3	72	20	92
Radiologic Technicians	1,090	1,640	555	51.1	46	14	60
EEG Technologists	110	150	49	46.7	4	2	6
EKG Technicians	290	310	17	5.9	1	5	6
Surgical Technicians	940	1,400	461	49.2	38	19	57
All Other Health Prof., Para., Tech	4,750	5,970	1,222	25.7	102	85	187
Writer, Artist, Enter., Athlete	26,360	30,930	4,567	17.3	383	930	1,313
Writers and Editors	3,490	4,180	695	19.9	58	185	243
Technical Writers	450	540	90	19.9	8	16	24
Public Relations Specialists	1,410	1,580	171	12.1	14	52	66
Reporters and Correspondents	1,840	2,260	418	22.7	35	79	114
Broadcast News Analysts	210	240	32	15.1	3	9	12
Announcers, Radio and TV	1,140	1,300	162	14.3	14	9	23
Announcers, Other	60	70	12	20.0	1	1	2

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Photographers	1,360	1,630	263	19.3	22	33	55
Camera Operators, TV and Movies	120	150	32	26.2	3	3	6
Broadcast Technicians	350	230	-113	-32.8	-9	5	-4
Film Editors	40	40	5	13.5	0	2	2
Artists and Commercial Artists	3,170	3,950	778	24.5	65	104	169
Designers, Exc. Interior Design	3,310	4,120	812	24.6	68	116	184
Interior Designers	2,210	2,840	635	28.8	53	79	132
Merchandise Displayers	490	550	65	13.3	5	16	21
Music Directors, Singers, and Related	2,040	2,090	46	2.3	4	83	87
Musicians, Instrumental	2,800	3,010	210	7.5	18	117	135
Dancers and Choreographers	190	220	28	14.6	2	2	4
Producers, Directors, Actors, Entertainer	390	480	85	21.7	7	4	11
Athlete, Coach, Umpire and Related	1,290	1,430	141	10.9	12	15	27
Technicians and Related Support Occ.	1,350	1,490	134	9.9	10	64	74
Air Traffic Controllers	240	280	40	16.8	3	4	7
Traffic Technicians	20	20	2	11.8	0	0	0
Radio Operators	120	130	12	9.9	1	2	3
Funeral Directors and Morticians	860	940	77	8.9	6	57	63
Embalmers	100	100	2	2.0	0	1	1
All Other Technicians	*	*	*	*	*	*	*
All Other Prof., Paraprof., Technicians	14,640	16,640	1,999	13.7	167	219	386
Marketing and Sales Occupations	**244,190**	**280,910**	**36,724**	**15.0**	**3,061**	**10,644**	**13,705**
First Line Supervisors, Sales	15,440	17,290	1,851	12.0	154	668	822
Sales Occupations, Services	22,700	29,760	7,063	31.1	589	1,053	1,642
Insurance Sales Workers	6,940	8,570	1,638	23.6	137	298	435
Brokers, Real Estate	1,780	2,220	440	24.7	37	104	141
Sales Agents, Real Estate	1,860	2,310	449	24.1	37	108	145
Real Estate Appraisers	590	750	164	27.9	14	35	49
Securities, Financial Serv. Sales	3,200	5,560	2,356	73.6	196	146	342
Sales Agents, Business Services	2,980	3,530	545	18.3	45	97	142
Travel Agents	2,310	3,140	830	35.9	69	131	200
Sales Agents, Advertising	2,180	2,600	417	19.1	35	88	123
All Other Service Sales Occupations	850	1,070	224	26.4	19	46	65
Commodity Sales	206,040	233,850	27,810	13.5	2,318	8,923	11,241
Sales Engineers	1,990	2,110	124	6.2	10	78	88
Sales Reps., Scientif. Prod., Exc. Retail	9,060	10,190	1,127	12.4	94	390	484
Other Sales Reps., Exc. Retail	36,040	38,780	2,741	7.6	228	1,515	1,743
Salespersons, Retail	71,180	83,850	12,675	17.8	1,056	3,837	4,893
Salespersons, Parts	5,240	6,090	858	16.4	72	120	192
Counter and Rental Clerks	4,140	5,010	870	21.0	73	245	318
Stock Clerks, Sales Floor	22,870	26,240	3,363	14.7	280	1,176	1,456
Cashiers	41,160	45,650	4,492	10.9	374	1,011	1,385
Vendors, Solicitors, Door-To-Door	6,870	7,340	477	7.0	40	248	288

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Demonstrators, Promoters, Models	450	580	126	27.9	11	43	54
All Other Sales and Related Occ.	7,050	8,010	957	13.6	80	260	340
Admin. Support Occ., Clerical	**358,980**	**396,130**	**37,148**	**10.4**	**3,096**	**11,277**	**14,373**
First Line Supervisors, Clerical	17,470	19,310	1,833	10.5	153	533	686
Industry Specific Support Occ.	48,250	57,010	8,757	18.2	729	1,185	1,914
Banking, Security, Finance, Credit	22,070	26,160	4,091	18.5	341	501	842
Bank Tellers	10,620	12,080	1,455	13.7	121	134	255
New Accounts Clerks	1,380	1,740	355	25.7	30	57	87
Transit Clerks	230	240	14	6.1	1	6	7
Loan Interviewers	500	690	195	39.4	16	16	32
Credit Authorizers	170	190	24	14.3	2	5	7
Credit Checkers	490	600	114	23.4	10	15	25
Loan and Credit Clerks	2,790	3,730	940	33.7	78	94	172
Adjustment Clerks	4,350	5,180	827	19.0	69	132	201
Statement Clerks	790	850	64	8.2	5	21	26
Brokerage Clerks	760	860	103	13.6	9	21	30
Records Processing Occ., Exc. Finan.	26,180	30,850	4,666	17.8	388	684	1,072
Insurance Adjusters, Investigator	3,790	4,840	1,050	27.7	88	61	149
Insurance Appraisers, Auto Damage	160	180	25	16.0	2	2	4
Insurance Examining Clerks	60	80	14	23.0	1	1	2
Insurance Claims Clerks	2,770	3,190	417	15.1	35	42	77
Insurance Policy Processing Clerks	3,760	4,250	497	13.2	41	115	156
Welfare Eligibility Workers	930	1,060	131	14.2	11	17	28
Investigators, Clerical	300	380	85	28.8	7	9	16
Bill and Account Collectors	1,610	2,050	436	27.1	36	71	107
Court Clerks	580	720	132	22.6	11	19	30
Municipal Clerks	1,180	1,310	130	11.0	11	36	47
License Clerks	120	140	11	8.9	1	4	5
Travel Clerks	40	50	5	12.2	0	1	1
Reservation and Trans. Ticket Agent	900	1,030	131	14.6	11	17	28
Hotel Desk Clerks	2,280	2,720	435	19.1	36	87	123
Library Assistants and Bookmobile	1,900	1,900	2	0.1	0	54	54
Teacher Aides and Educ. Assistants	4,690	5,730	1,037	22.1	86	100	186
Advertising Clerks	300	410	110	36.5	9	12	21
Proofreaders and Copy Markers	410	380	-28	-6.9	-2	20	18
Real Estate Clerks	400	450	46	11.4	4	16	20
Secretarial General Office Occ.	208,650	227,120	18,464	8.9	1,538	7,215	8,753
Secretaries	56,840	64,320	7,475	13.2	623	1,860	2,483
Secretaries	42,760	46,670	3,903	9.1	325	1,421	1,746
Legal Secretaries	4,500	5,290	792	17.6	66	136	202
Medical Secretaries	4,000	5,850	1,847	46.2	154	136	290
All Other Secretaries	5,580	6,510	933	16.7	78	167	245
General Office Occupations	151,810	162,800	10,989	7.2	915	5,355	6,270

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Stenographers	1,930	1,530	-398	-20.7	-33	78	45
Receptionists, Information Clerks	15,580	20,420	4,839	31.1	403	484	887
Typists	10,920	9,430	-1,498	-13.7	-125	212	87
Typists, Word Processing Equipment	5,390	4,700	-693	-12.9	-58	105	47
Personnel Clerks, Except Payroll	1,850	2,030	187	10.1	16	46	62
Correspondence Clerks	370	460	81	21.7	7	7	14
File Clerks	5,050	5,290	240	4.8	20	132	152
Order Clerks: Materials, Service	5,680	5,500	-184	-3.2	-15	144	129
Procurement Clerks	840	970	125	14.8	10	27	37
Statistical Clerks	900	900	-6	-0.7	-1	27	26
Interviewing Clerks, Ex. Personnel	1,250	1,410	159	12.7	13	49	62
Customer Service Reps., Utilities	1,380	1,590	208	15.1	17	38	55
Bookkeeping & Acctg. & Auditing	42,920	42,770	-157	-0.4	-13	1,778	1,765
Payroll and Timekeeping Clerks	3,420	3,280	-135	-4.0	-11	111	100
Billing, Cost and Rate Clerks	5,940	6,080	132	2.2	11	135	146
General Office Clerks	48,380	56,470	8,089	16.7	674	1,982	2,656
Data Proc., Comm. Equip., Distrib, Occ.	84,610	92,700	8,094	9.6	676	2,344	3,020
Data Processing, Office Machines	16,870	17,540	670	4.0	57	212	269
Bill, Post, Calculating Mach Operator	1,880	1,650	-231	-12.3	-19	24	5
Duplicating Machine Operators	660	710	49	7.5	4	7	11
Mail Machine Operators	580	670	82	14.1	7	23	30
Computer Operators, Exc. Periph.	4,240	5,460	1,220	28.8	102	38	140
Peripheral EDP Equipment Operators	860	1,100	237	27.6	20	17	37
Data Entry Keyers, Ex. Composing	7,260	6,650	-613	-8.4	-51	74	23
Data Entry Keyers, Composing	490	400	-95	-19.4	-8	5	-3
All Other Office Machine Operators	900	920	21	2.3	2	24	26
Communications Equipment Operators	4,470	5,090	620	13.9	51	149	200
Switchboard Operators	3,910	4,620	707	18.1	59	133	192
Directory Assistance Operators	370	290	-81	-21.7	-7	10	3
Central Office Operators	110	100	-19	-16.7	-2	3	1
Telegraph and Teletype Operators	40	50	11	26.8	1	2	3
All Other Communication Operators	30	30	2	6.7	0	1	1
Mail & Message Distribution Workers	10,280	11,170	891	8.7	75	423	498
Mail Clerks, Excluding Mail Machine	1,580	1,570	-5	-0.3	0	48	48
Postal Mail Carriers	5,660	6,240	587	10.4	49	215	264
Postal Service Clerks	1,770	1,870	102	5.8	9	69	78
Messengers	1,280	1,490	207	16.2	17	91	108
Material Record., Scheduling, Distrib.	43,570	47,650	4,078	9.4	340	1,262	1,602
Dispatcher: Police, Fire, Ambulance	1,330	1,460	135	10.2	11	35	46
Dispatch.: Exc. Police Fire, Ambulance	1,900	2,120	218	11.5	18	51	69
Production, Expediting Clerks	4,760	5,390	631	13.3	53	140	193
Transportation Agents	130	150	25	19.5	2	3	5
Meter Readers, Utilities	970	860	-103	-10.7	-9	23	14
Weighers, Measurers, Checkers	610	690	77	12.6	6	21	27

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Marking Clerks	1,330	1,510	177	13.3	15	43	58
Stock Clerks: Stock., Or Warehouse	12,720	13,760	1,042	8.2	87	396	483
Order Fillers, Sales	3,800	4,040	239	6.3	20	117	137
Traffic, Shipping, & Receiving Clerks	13,830	15,140	1,306	9.4	109	361	470
All Other Material Workers	2,210	2,540	331	15.0	28	72	100
All Other Clerical & Admin. Support	9,420	11,250	1,835	19.5	153	298	451
Service Occupations	**396,500**	**473,580**	**77,080**	**19.4**	**6,426**	**17,209**	**23,635**
First Line Supervisors, Service	10,930	12,830	1,899	17.4	160	599	759
Fire Fighting and Prev. Supervisors	850	940	90	10.6	8	22	30
Police and Detective Supervisors	1,420	1,590	162	11.4	14	28	42
Housekeepers, Institutional	1,360	1,700	343	25.3	29	273	302
All Other Service Supervisors	7,300	8,600	1,304	17.9	109	276	385
Private Household Workers	1,850	1,800	-51	-2.8	-5	183	178
Cooks, Private Household	40	40	-1	-2.3	0	1	1
Housekeepers and Butlers	70	70	0	0.0	0	2	2
Child Care Workers, Private Household	710	670	-42	-5.9	-4	22	18
Cleaners & Servants, Prvt. Household	1,020	1,010	-8	-0.8	-1	158	157
Protective Service Occupations	29,940	35,610	5,671	18.9	474	1,457	1,931
Fire Inspectors	100	110	9	8.7	1	4	5
Forest Fire Inspect and Prevention	90	100	9	9.9	1	3	4
Fire Fighters	4,610	5,140	526	11.4	44	61	105
Police Detective	1,000	1,090	92	9.2	8	12	20
Police Patrol Officers	6,540	7,600	1,060	16.2	88	81	169
Correction Officers and Jailers	2,500	3,550	1,043	41.7	87	59	146
Parking Enforcement Officers	160	170	14	8.9	1	6	7
Bailiffs	220	240	20	9.0	2	8	10
U.S. Marshalls	*	*	*	*	*	*	*
Criminal Investigators, Federal	90	100	4	4.3	0	1	1
Sheriffs and Other Law Enforcement	1,970	2,090	116	5.9	9	106	115
Sheriffs and Deputy Sheriffs	1,360	1,360	5	0.4	0	48	48
Detectives and Investigators	610	720	110	18.1	9	58	67
Railroad and Transit Police	*	*	*	*	*	*	*
Other Protective Service Workers	10,850	13,350	2,502	23.1	210	1,095	1,305
Fish and Game Wardens	190	210	18	9.4	2	7	9
Crossing Guards	1,350	1,440	90	6.7	8	172	180
Guards	9,310	11,710	2,394	25.7	200	916	1,116
All Other Protective Service	1,790	2,060	276	15.4	23	21	44
Food & Beverage Service Occupations	181,610	218,550	36,937	20.3	3,078	5,923	9,001
Hosts & Hostesses: Rest., Lounge	3,630	4,610	977	26.9	81	128	209
Bartenders	29,580	35,180	5,607	19.0	467	1,350	1,817
Waiters and Waitresses	45,860	58,270	12,410	27.1	1,034	666	1,700
Food Servers	2,230	2,620	389	17.5	32	23	55
Dining Room and Bartender Helpers	11,280	14,180	2,900	25.7	242	227	469
Counter Attendants	4,810	5,430	618	12.9	52	50	102

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Bakers, Bread and Pastry	4,060	5,580	1,522	37.5	127	197	324
Butchers and Meat Cutters	4,430	4,710	287	6.5	24	194	218
Cooks, Restaurant	12,450	15,350	2,902	23.3	242	569	811
Cooks, Institution Or Cafeteria	9,180	10,030	844	9.2	70	393	463
Cooks, Fast Food	9,790	10,790	1,002	10.2	84	421	505
Cooks, Short Order	3,360	3,840	478	14.2	40	42	82
Food Preparation Workers	20,100	23,800	3,699	18.4	308	924	1,232
Food Preparation, Serv. Fast Food	13,900	15,600	1,702	12.3	142	487	629
All Other Food Service Workers	6,970	8,570	1,600	23.0	133	252	385
Health Service Occupations	57,640	74,050	16,405	28.5	1,367	2,094	3,461
Dental Assistants	3,900	4,430	531	13.6	44	43	87
Medical Assistants	2,610	4,150	1,540	59.0	128	71	199
Nursing Aides and Orderlies	36,450	44,630	8,182	22.5	682	1,338	2,020
Home Health Aides	7,800	12,130	4,331	55.5	361	364	725
Psychiatric Aides	1,850	2,250	397	21.5	33	68	101
Physical, Correct. Therapy Assistants	830	1,090	258	31.1	22	20	42
Occupational Therapy Assistants	290	380	94	32.4	8	7	15
Ambulance Drivers and Attendants	360	390	29	8.0	2	8	10
Pharmacy Assistants	1,740	2,190	445	25.6	37	41	78
All Other Health Service Workers	1,800	2,400	598	33.2	50	134	184
Cleaning & Bldg. Serv. Occ., Ex. Priv.	68,770	78,950	10,176	14.8	849	5,339	6,188
Janitors, Cleaners, Maids	100	110	10	9.9	1	3	4
Maids and Housekeeping Cleaners	18,290	22,120	3,826	20.9	319	1,477	1,796
Janitors and Cleaners	44,830	50,580	5,750	12.8	479	3,435	3,914
Pest Controllers and Assistants	360	390	32	9.0	3	24	27
All Other Cleaning Building Service	5,190	5,750	558	10.8	47	400	447
Personal Service Occupations	41,870	47,340	5,463	13.1	455	1,348	1,803
Barbers	2,080	1,370	-715	-34.4	-60	190	130
Hairdressers and Cosmetologists	21,780	24,150	2,362	10.8	197	553	750
Manicurists	350	430	82	23.4	7	9	16
Shampooers	20	20	2	13.3	0	0	0
Amusement and Recreation Attendant	1,580	1,800	219	13.9	18	35	53
Guides	110	130	27	25.2	2	4	6
Ushers, Lobby Attendants, Ticket Taker	700	720	26	3.7	2	9	11
Baggage Porters and Bellhops	360	430	68	19.0	6	13	19
Flight Attendants	30	40	9	29.0	1	0	1
Transportation Attendants	*	*	*	*	*	*	*
Wardrobe & Dressing Room Attendants	60	80	15	24.2	1	4	5
Social Welfare Service Aides	2,180	3,210	1,031	47.3	86	98	184
Child Care Workers	12,470	14,790	2,324	18.6	194	422	616
Funeral Attendants	160	180	13	8.0	1	11	12
All Other Service Workers	3,880	4,460	580	15.0	48	266	314
Agriculture, Forestry, Fishing	**21,000**	**24,660**	**3,666**	**17.5**	**305**	**1,197**	**1,502**
Farm Operators and Managers	180	240	65	37.1	5	16	21

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Farm Managers	180	240	65	37.1	5	16	21
Supervisors, Farm, Forest, Ag. Related	470	550	81	17.3	7	16	23
Forestry and Logging Occupations	2,610	2,810	199	7.6	17	75	92
Fallers and Buckers	1,410	1,460	47	3.3	4	46	50
Choke Setters	40	40	2	4.8	0	1	1
Log Handling Equipment Operators	400	470	71	17.8	6	14	20
Logging Tractor Operators	680	750	69	10.1	6	12	18
All Other Timber Cutting Workers	70	80	10	13.9	1	2	3
Farm Occupations	980	1,060	75	7.7	6	32	38
Farm Workers	980	1,060	75	7.7	6	32	38
Fishers, Hunters and Trappers	*	*	*	*	*	*	*
Other Agriculture & Forestry Occup.	15,480	18,620	3,132	20.2	261	1,016	1,277
Forest and Conservation Workers	1,200	1,330	127	10.6	11	54	65
Nursery Workers	360	500	136	37.8	11	18	29
Log Graders and Scalers	170	170	6	3.6	1	5	6
Graders & Sorters, Agricultural Prod.	300	350	44	14.6	4	14	18
Gardeners and Groundskeepers	11,820	14,560	2,740	23.2	228	881	1,109
Animal Caretakers, Except Farm	970	1,050	76	7.8	6	20	26
Farm Equipment Operators	670	670	3	0.5	0	24	24
All Other Agric., Forestry, Fishing	1,270	1,380	112	8.8	9	42	51
Precision Products, Craft & Repair	**263,580**	**291,390**	**27,816**	**10.6**	**2,325**	**8,824**	**11,149**
Blue Collar Worker Supervisors	31,810	34,410	2,600	8.2	217	969	1,186
First Line Supvr., Mech. & Repair	6,170	6,900	730	11.8	61	223	284
First Line Supvr., Const. Extrac.	3,830	4,170	336	8.8	28	134	162
First Line Supvr., Production	15,380	16,090	715	4.7	60	458	518
First Line Supvr., Transportation	2,230	2,380	149	6.7	12	51	63
First Line Supvr., Helpers, Laborers	1,480	1,540	58	3.9	5	7	12
First Line Supervisors, All Other	2,730	3,340	612	22.4	51	96	147
Inspectors, Testers ,Graders, Prec.	13,630	13,580	-51	-0.4	-4	427	423
Inspectors, Related Occupations	140	170	29	20.7	2	5	7
Inspectors, Tester, Graders, Precision	4,630	4,760	133	2.9	11	133	144
Production Inspectors, Graders	8,580	8,330	-250	-2.9	-21	277	256
Transportation Inspectors	70	80	7	9.7	1	5	6
All Other Inspectors, Testers	210	240	30	14.6	3	7	10
Mechanics, Installers, Repairers	96,040	109,260	13,224	13.8	1,105	3,107	4,212
Industrial Machinery Mechanics	33,680	40,410	6,729	20.0	561	1,241	1,802
Industrial Machinery Mechanics	5,810	7,200	1,390	23.9	116	207	323
Machinery Mechanics, Textile Machine	160	160	1	0.6	0	5	5
Machinery Mechanics, Sewing Machine	100	110	11	11.2	1	3	4
Machinery Mechanics, Marine Equip.	40	40	6	17.1	1	1	2
Machinery Mechanics Water/Power	830	1,030	201	24.4	17	26	43
All Other Machinery Mechanics	740	930	183	24.6	15	23	38
Millwrights	2,300	2,860	563	24.5	47	73	120

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Refractory Material Repairers	200	180	-18	-9.0	-2	6	4
Machinery Maintenance Workers	1,360	1,700	338	24.9	28	65	93
Maintenance Repairers, General Util.	22,150	26,210	4,054	18.3	338	832	1,170
Vehicle & Mobile Equip. Mechanic	34,150	38,340	4,186	12.3	350	796	1,146
Automotive Mechanics	16,190	18,000	1,808	11.2	151	393	544
Automotive Body, Related Repairer	5,240	6,100	853	16.3	71	100	171
Motorcycle Repairers	330	330	-2	-0.6	0	6	6
Bus, Truck, Diesel Engine Mechanic	6,180	7,160	971	15.7	81	145	226
Mobile Heavy Equipment Mechanics	1,010	1,160	149	14.8	12	27	39
Rail Car Repairers	190	230	32	16.5	3	5	8
Farm Equipment Mechanics	3,190	3,300	114	3.6	10	89	99
Aircraft Mechanics	460	510	55	12.0	5	5	10
Aircraft Engine Specialists	40	40	2	4.8	0	2	2
Small Engine Specialists	1,310	1,510	204	15.6	17	24	41
Communications Equip. Mechanics	1,390	1,160	-232	-16.7	-19	46	27
Central Office and PBX Install./Rpr.	1,110	870	-240	-21.6	-20	35	15
Frame Wirers, Central Office	90	70	-19	-21.8	-2	3	1
Telegraph and Teletype Installers	*	*	*	*	*	*	*
Signal Or Track Switch Maint.	70	80	6	8.6	1	3	4
Radio Mechanics	110	130	20	19.1	2	4	6
All Other Comm. Equip. Mechanics	10	20	1	7.1	0	1	1
Electrical and Electronic Equip. Mech.	9,630	10,510	881	9.2	73	265	338
Telephone and Cable TV Install./Rpr.	2,220	1,730	-487	-22.0	-41	39	-2
Data Processing Equip. Repairers	890	1,480	589	66.3	49	7	56
Elec. Home Entertainment Eq. Rpr.	1,080	1,210	134	12.4	11	47	58
Electr. Home Appliance & Power Tool	850	900	51	6.0	4	40	44
Electric Motor Repairers	370	460	91	24.8	8	19	27
Electronics Repairers, Comm. and Ind.	550	660	107	19.5	9	21	30
Powerhouse and Relay Electricians	260	290	26	9.9	2	10	12
Elec. Powerline Installers/Repairers	2,220	2,520	297	13.4	25	36	61
Station Install and Repair, Telephone	370	290	-78	-21.3	-7	5	-2
Electrical Installers and Repairer	180	230	47	26.1	4	9	13
All Other Electric., Electro. Mech.	650	750	104	16.0	9	32	41
Other Mechanics, Installers/Repairers	17,190	18,850	1,660	9.7	140	759	899
Heating, A/C, Refrigeration Mech.	3,820	4,230	418	11.0	35	168	203
Precision Instrument Repairers	1,040	1,240	199	19.1	17	84	101
Electromedical & Biomedical Repairers	120	160	40	33.1	3	10	13
Electric Meter Installers/Repairers	250	280	31	12.5	3	19	22
Camera and Photographic Repairers	120	150	35	29.7	3	10	13
Watchmakers	200	210	9	4.5	1	15	16
Musical Instrument Repair and Tune	240	250	12	5.1	1	18	19
Locksmiths And Safe Repairers	240	250	8	3.4	1	14	15
Office Machine, Register Servicer	1,050	1,080	22	2.1	2	19	21
Mech. Control Installers & Repairers	470	490	29	6.2	2	31	33

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Elevator Installers and Repairers	120	130	9	7.8	1	1	2
Riggers	30	30	-1	-3.5	0	1	1
Mobile Home Installer and Repairer	300	340	45	15.3	4	12	16
Gas Appliance Repairers	640	610	-34	-5.3	-3	22	19
Coin and Vending Machine Servicers	810	860	47	5.8	4	31	35
Bicycle Repairers	310	330	20	6.5	2	12	14
Tire Repairers and Changers	1,590	1,800	203	12.7	17	63	80
Menders, Garments and Linens	210	220	15	7.3	1	8	9
All Other Mechanics, Installers	5,650	6,200	553	9.8	46	221	267
Construction Trades, Extractive	66,260	73,630	7,371	11.1	615	2,197	2,812
Construction Trades	65,240	72,540	7,296	11.2	610	2,141	2,751
Carpenters	18,690	20,990	2,304	12.3	192	734	926
Ceiling Tile Installers	240	260	19	8.0	2	9	11
Drywall Installers	740	800	58	7.9	5	3	8
Tapers	400	430	31	7.9	3	2	5
Lathers	90	90	7	8.1	1	0	1
Electricians	9,510	10,780	1,264	13.3	105	276	381
Brick Masons	3,350	3,590	244	7.3	20	96	116
Stone Masons	350	380	24	6.8	2	10	12
Hard Tile Setters	480	530	59	12.4	5	13	18
Concrete And Terrazzo Finishers	1,720	1,860	138	8.0	12	35	47
Reinforcing Metal Workers	50	50	3	5.9	0	1	1
Plasterers	260	260	-3	-1.2	0	10	10
Painters and Paperhangers	5,800	6,370	574	9.9	48	273	321
Plumber, Pipefitter, Steamfitter	6,600	7,510	910	13.8	76	217	293
Pipelaying Fitters	10	10	1	7.7	0	0	0
Pipelayers	830	910	85	10.3	7	27	34
Septic Tank, Sewer Servicers	310	310	1	0.3	0	10	10
Carpet Installers	950	1,100	150	15.8	13	15	28
Floor Layers, Excluding Carpet	170	180	15	9.1	1	4	5
Floor Sanding Machine Operators	20	20	1	6.7	0	0	0
Air Hammer Operators	60	60	4	7.3	0	2	2
Pile Driving Operators	50	50	2	4.4	0	1	1
Paving, Surfacing, Tamping	1,560	1,740	176	11.3	15	64	79
Highway Maintenance Workers	5,580	6,130	547	9.8	46	183	229
Rail-Track Laying Equip. Oper.	160	180	26	16.7	2	5	7
Insulation Workers	1,200	1,320	119	9.9	10	13	23
Sheet Metal Duct Installers	880	950	71	8.1	6	22	28
Roofers	1,640	1,800	167	10.2	14	18	32
Glaziers	630	710	83	13.2	7	19	26
Structural Metal Workers	1,280	1,360	83	6.5	7	24	31
Fence Erectors	30	30	2	6.3	0	1	1
All Other Construction Workers	1,650	1,780	131	7.9	11	54	65
Extractive and Blasting Workers	1,020	1,090	75	7.4	5	56	61

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Extractive and Related Workers	30	30	1	3.7	0	1	1
Earth Drillers, Excluding Oil and Gas	170	170	5	3.0	0	4	4
Blasters and Explosives Workers	30	30	1	4.0	0	1	1
Rock Splitters, Quarry	20	20	2	10.0	0	1	1
Derrick Operators, Oil and Gas	*	*	*	*	*	*	*
Mine Cutting Machine Operators	*	*	*	*	*	*	*
All Other Mining Machine Operators	*	*	*	*	*	*	*
All Other Extractive Occ., Ex. Helpers	10	10	1	9.1	0	0	0
All Other Constr. and Extractive	760	820	65	8.6	5	49	54
Precision Production Occupations	55,850	60,520	4,672	8.4	392	2,124	2,516
Precision Metal Workers	29,540	32,420	2,877	9.7	241	895	1,136
Tool and Die Makers	7,100	7,780	685	9.7	57	234	291
Instrument Makers, Precision	200	240	37	18.7	3	6	9
Machinists	13,690	15,670	1,974	14.4	165	423	588
Tool Grinders, Filers, Sharpeners	1,620	1,610	-8	-0.5	-1	52	51
Pattern and Model Makers, Metal	180	180	2	1.1	0	8	8
Layout Workers, Metal, Precision	310	300	-1	-0.3	0	7	7
Shipfitters	480	400	-82	-16.9	-7	10	3
Jewelers and Silversmiths	500	560	57	11.4	5	18	23
Hand Workers, Jewelry, Precision	20	20	0	0.0	0	1	1
Etchers and Engravers, Precision	30	30	-1	-3.5	0	1	1
Sheet Metal Workers	4,050	4,190	141	3.5	12	117	129
Boilermakers	350	400	55	15.8	5	15	20
All Other Precision Metal Worker	1,030	1,050	18	1.8	2	3	5
Precision Woodworkers	6,980	7,290	310	4.4	25	361	386
Precision Woodworkers	80	90	11	14.1	1	3	4
Pattern and Model Makers, Wood	1,020	1,040	16	1.6	1	76	77
Pattern Markers, Wood	10	10	0	0.0	0	0	0
Wood Machinists	1,570	1,670	107	6.8	9	85	94
Cabinetmakers and Bench Carpenters	2,560	2,670	110	4.3	9	138	147
Furniture Finishers	1,350	1,410	61	4.5	5	46	51
All Other Precision Woodworkers	390	390	5	1.3	0	13	13
Textile, Apparel, Furnish, Precsion	6,360	6,750	389	6.1	32	475	507
Patternmaker, Layout Workers, Fab.	220	220	-8	-3.6	-1	3	2
Custom Tailors and Sewers	3,350	3,680	330	9.8	28	293	321
Upholsterers	1,230	1,360	123	10.0	10	73	83
Shoe and Leather Workers	1,010	940	-69	-6.8	-6	73	67
Spotters, Dry Cleaning	70	80	10	13.9	1	5	6
Pressers, Delicate Fabrics	230	250	21	9.2	2	15	17
Dyers, Precision	40	30	-8	-22.9	-1	2	1
All Other Precision Textile, Apparel	210	200	-10	-4.9	-1	11	10
Precision Printing Workers	3,140	3,780	641	20.4	54	92	146
Compositor, Typesetter, Precision	550	570	20	3.6	2	20	22
Job Printers	170	200	34	20.1	3	7	10

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Litho. & Photoengraving, Precision	1,960	2,480	516	26.3	43	46	89
Bookbinders	400	460	59	14.6	5	17	22
All Other Precision Printing	50	70	12	22.6	1	2	3
Precision Food Workers	3,630	3,730	96	2.6	8	133	141
Slaughterers and Butchers	900	850	-53	-5.9	-4	37	33
Bakers, Manufacturing	1,170	1,320	149	12.8	12	59	71
Food Batchmakers	1,400	1,400	3	0.2	0	33	33
All Other Precision Food, Tobacco	160	160	-3	-1.9	0	4	4
Other Precision Workers	6,200	6,560	359	5.8	32	168	200
Foundry Mold and Core Makers	2,010	1,910	-101	-5.0	-8	45	37
Molders and Shapers, Exc. Jewelry	390	410	19	4.9	2	9	11
Patternmakers, Model Makers	150	160	8	5.3	1	4	5
Detail Design Decorators and Painters	160	190	31	19.9	3	3	6
Photographic Process Workers	220	280	56	25.3	5	5	10
Optical Goods Workers	200	250	47	23.6	4	3	7
Dental Laboratory Technicians	1,330	1,410	80	6.0	7	35	42
Medical Appliance Makers	20	20	3	17.7	0	0	0
All Other Precision Workers	1,730	1,940	216	12.5	18	64	82
Operators, Fabricators & Laborers	**444,480**	**458,050**	**13,570**	**3.1**	**1,135**	**11,898**	**13,033**
Machine Working Occupations	146,900	153,160	6,265	4.3	525	3,948	4,473
Mach. Setters Set-Up Oper., Tenders	37,990	39,000	1,014	2.7	86	859	945
Sawing Mach. Tool Setter/Oper., M/P	830	850	24	2.9	2	16	18
Lathe, Turning Mach. Setter/Op., M/P	4,250	4,390	140	3.3	12	90	102
Drill., Boring Mach. Setter/Op., M/P	3,060	3,120	66	2.2	6	65	71
Mill., Planing Mach. Setter/Op., M/P	1,010	1,040	34	3.4	3	16	19
Grinding Machine Setter/Oper., M/P	2,750	2,770	24	0.9	2	76	78
Machine Tool Cutting Oper., M/P	4,460	4,160	-307	-6.9	-26	102	76
Punching Mach. Setter/Oper., M/P	2,780	2,930	143	5.1	12	71	83
Press, Brake Mach. Setter/Oper., M/P	2,390	2,420	26	1.1	2	60	62
Shear, Slitter Mach. Setter/Oper., M/P	750	800	57	7.6	5	19	24
Extruding Mach. Setter/Oper., M/P	720	780	51	7.0	4	12	16
Rolling Machine Setter/Oper., M/P	90	90	-2	-2.1	0	2	2
Forging Machine Setter/Oper., M/P	360	370	11	3.1	1	7	8
Machine Forming Operators, M/P	7,040	6,640	-396	-5.6	-33	143	110
Numerical Control Mach. Tool, M/P	2,690	3,130	438	16.3	37	79	116
Comb. Mach. Tool Set./Op., M/P	2,830	3,240	414	14.6	35	59	94
Combination Mach. Tool Oper., M/P	1,990	2,280	291	14.6	24	42	66
Metal Fabricating Setters & Operators	7,230	6,730	-494	-6.8	-42	160	118
Welding Machine Setter/Operator	2,820	2,580	-242	-8.6	-20	49	29
Welding Machine Operators	2,370	2,190	-181	-7.6	-15	41	26
Soldering, Brazing Mach. Setter/Oper.	240	230	-6	-2.5	-1	6	5
Soldering, Brazing Machine Operator	170	180	4	2.3	0	4	4
Metal Fabricators, Structural Metal	1,620	1,550	-69	-4.3	-6	60	54

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Metal & Plastic Process. Mach. Setter	13,570	13,940	373	2.8	31	282	313
Plastic Molding, Casting Setter/Oper.	480	590	114	24.0	10	9	19
Plastic Molding, Casting Operator	3,280	4,090	806	24.5	67	59	126
Metal Molding, Casting Setter/Oper.	1,090	1,060	-32	-2.9	-3	17	14
Metal Molding, Casting Operator	800	760	-31	-3.9	-3	13	10
Foundry Mold Assembly/Shakeout	980	820	-159	-16.3	-13	14	1
Electrolytic Plating Setter/Oper., M/P	340	330	-12	-3.5	-1	5	4
Electrolytic Plating Oper., M/P	970	920	-51	-5.3	-4	14	10
Nonelectrolytic Plating Setter, M/P	40	40	-3	-6.8	0	1	1
Nonelectrolytic Plating Operator, M/P	180	170	-9	-5.1	-1	2	1
Heating Equipment Setter/Oper., M/P	360	370	11	3.1	1	7	8
Heat Treating, Tempering Mach. Oper.	440	400	-34	-7.8	-3	8	5
Furnace Operators and Tenders	860	830	-39	-4.5	-3	17	14
Heaters, Metal and Plastic	50	50	3	6.4	0	1	1
All Other Metal & Plas. Mach. Set./Op.	3,710	3,520	-191	-5.2	-16	115	99
Woodworking Machine Setters/Op.	5,740	6,460	712	12.4	60	219	279
Sawing Machine Setter/Operator	330	390	59	17.9	5	10	15
Head Sawyers	210	240	34	16.3	3	7	10
Sawing Machine Operator/Tender	2,300	2,640	335	14.6	28	72	100
Woodworking Machine Setter/Oper.	1,040	1,140	97	9.3	8	52	60
Woodworking Machine Operators	1,860	2,050	187	10.0	16	78	94
Printing, Binding & Related Occup.	16,660	19,860	3,196	19.2	267	421	688
Printing Press Machine Setter/Oper.	470	560	87	18.4	7	16	23
Offset Lithographic Press Setter	2,250	3,040	784	34.8	65	47	112
Letterpress Setter/Operator	870	900	33	3.8	3	16	19
All Other Print. Press Setter/Operator	450	580	131	29.3	11	9	20
Photoengraving & Lith. Photographer	460	560	102	22.1	9	11	20
Specialty Materials Printing	380	400	17	4.5	1	8	9
Screen Print. Machine Setter/Operator	640	750	106	16.5	9	19	28
Bindery Machine Setter/Operator	1,510	1,780	270	17.9	23	44	67
All Other Printing Setter/Oper.	670	770	100	14.9	8	19	27
Typesetting Mach. Operator/Tender	1,830	2,290	459	25.1	38	72	110
Printing Press Machine Operator	4,630	5,220	591	12.8	49	87	136
Photoengraving & Lithographic Oper.	210	280	78	37.9	7	5	12
Bindery Machine Operators	1,360	1,610	250	18.4	21	40	61
All Other Printing, Binding & Related	940	1,130	188	20.1	16	28	44
Textile MachineOperators and Related	11,070	11,250	186	1.7	16	571	587
Textile Machine Setter/Operator	30	30	-1	-2.9	0	1	1
Textile Machine Operators	910	770	-144	-15.8	-12	18	6
Extruding Machine Operator, Fibers	70	90	14	19.4	1	2	3
Textile Draw-Out Machine Operator	*	*	*	*	*	*	*
Textile Dyeing Machine Operator	40	30	-8	-19.5	-1	1	0
Sewing Machine Operator, Garment	3,290	3,170	-120	-3.7	-10	164	154
Sewing Mach. Operator, Non-Garment	2,260	2,140	-125	-5.5	-10	112	102

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Shoe Sewing Machine Operator	440	260	-181	-41.3	-15	13	-2
Laundry, Drycleaning Mach. Operator	2,930	3,520	588	20.1	49	197	246
Pressing Machine Operator, Textiles	1,090	1,250	164	15.1	14	63	77
Other Machine Setter/Oper., Tender	54,640	55,920	1,278	2.3	107	1,436	1,543
Electronic Semiconductor	170	170	-1	-0.6	0	4	4
Motion Picture Projectionists	190	190	-1	-0.5	0	8	8
Photographic Processing Mach. Oper.	980	1,080	98	10.0	8	19	27
Tire Building Machine Operator	440	500	56	12.6	5	10	15
Paper Goods Machine Setter/Operator	2,800	2,970	179	6.4	15	51	66
Cook. Machine Oper., Food/Tobacco	320	290	-37	-11.5	-3	6	3
Roast., Drying Oper., Food/Tobacco	480	430	-51	-10.7	-4	8	4
Furnace, Kiln, Oven, Kettle Operator	450	400	-48	-10.6	-4	11	7
Boiler Operator, Tender Low Press	730	770	38	5.2	3	35	38
Cooling, Freezing Equipment Operator	250	250	3	1.2	0	5	5
Dairy Processing Equipment Operator	2,840	2,850	2	0.1	0	60	60
Chemical Equipment Controller/Oper.	530	500	-29	-5.5	-2	11	9
Chemical Equipment Tender	240	230	-17	-7.0	-1	5	4
Cutting and Slicing Setter/Oper.	690	630	-62	-9.0	-5	18	13
Cutting and Slicing Machine Oper.	3,810	3,550	-258	-6.8	-22	102	80
Painters, Transportation Equipment	670	550	-123	-18.3	-10	13	3
Coating, Painting Setter/Oper.	1,910	2,160	245	12.8	20	45	65
Painting Machine Oper. and Tenders	3,360	3,860	493	14.7	41	80	121
Cementing & Gluing Machine Oper.	1,440	1,300	-136	-9.5	-11	30	19
Cleaning, Pickling Equipment Oper.	1,170	1,200	27	2.3	2	48	50
Separating, Filtering Machine Oper.	730	660	-61	-8.4	-5	22	17
Crushing and Mixing Machine Oper.	3,580	3,300	-285	-8.0	-24	96	72
Extruding, Forming Setter/Oper.	950	1,140	184	19.3	15	14	29
Extruding and Forming Operator	3,480	4,090	606	17.4	51	51	102
Packaging and Filling Machine Oper.	9,660	9,000	-660	-6.8	-55	395	340
All Other Machine Setters/Oper.	1,800	1,990	189	10.5	16	40	56
All Other Machine Operators	10,960	11,880	927	8.5	77	249	326
Hand Working Occ., Inc. Assembler	93,800	89,910	-3,890	-4.2	-322	2,297	1,975
Precision Assemblers	7,630	6,200	-1,432	-18.8	-120	158	38
Aircraft Structure Assembly	60	50	-6	-10.5	-1	1	0
Machine Builders, Assemblers	2,780	2,560	-220	-7.9	-18	61	43
Fitters, Structural Metal, Precision	280	260	-20	-7.1	-2	4	2
Electromechanical Equip. Assembler	920	910	-1	-0.1	0	21	21
Electrical, Electronic Assembler, Prec.	3,140	1,980	-1,161	-37.0	-97	64	-33
Watch, Chronometer Assemblers	50	50	3	6.0	0	1	1
All Other Precision Assemblers	410	380	-27	-6.6	-2	6	4
Other Hand Workers and Assemblers	81,710	79,030	-2,684	-3.3	-222	2,001	1,779
Machine Assemblers	2,500	2,280	-211	-8.5	-18	55	37
Electrical, Electronic Assembler	9,360	6,060	-3,293	-35.2	-274	177	-97
Coil Winders, Tapers, Finishers	1,350	1,420	67	5.0	6	57	63

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Glazier, Manufacturing	270	280	10	3.7	1	12	13
Welders and Cutters	10,570	9,830	-734	-7.0	-61	185	124
Solderers and Brazers	530	530	-4	-0.8	0	13	13
Pressers, Hand	140	130	-3	-2.2	0	6	6
Sewers, Hand	190	180	-19	-9.8	-2	10	8
Cutters and Trimmers, Hand	1,460	1,730	277	19.0	23	31	54
Portable Machine Cutters	120	120	0	0.0	0	2	2
Carpet Cutters, Diagrammers	50	60	10	20.0	1	1	2
Cannery Workers	2,800	2,630	-164	-5.9	-14	113	99
Meat, Poultry, Fish Cutters	3,210	3,650	442	13.8	37	66	103
Metal Pourers, Basic Shapes	720	610	-117	-16.2	-10	11	1
Molders and Casters, Hand	200	210	6	3.0	1	3	4
Painting and Coating, Hand	730	710	-12	-1.7	-1	36	35
Engraving and Printing, Hand	110	130	21	18.9	2	0	2
Grinding and Polishing, Hand	4,150	3,600	-553	-13.3	-46	72	26
All Other Assemblers, Fabricator	35,940	36,940	1,003	2.8	84	834	918
All Other Hand Workers	7,330	7,920	590	8.1	49	317	366
Plant and System Occupations	4,460	4,690	226	5.1	20	138	158
Water and Waste Treat. Plant Oper.	1,780	2,060	277	15.6	23	55	78
Gas Plant Operators	40	30	-5	-14.3	0	1	1
Chemical Plant and System Oper.	180	160	-24	-13.0	-2	5	3
Petroleum Pump System Operators	*	*	*	*	*	*	*
Petroleum Refinery Operators	50	50	-3	-6.0	0	1	1
Gaugers	10	10	-2	-20.0	0	0	0
Power Generating Plant Operator	600	680	74	12.3	6	19	25
Auxiliary Equip. Oper., Power	210	180	-23	-11.2	-2	6	4
Power Reactor Operators	80	100	12	14.5	1	3	4
Power Distributors and Dispatchers	250	280	32	12.8	3	8	11
Stationary Engineers	410	390	-16	-4.0	-1	19	18
All Other Plant and System Occ.	850	750	-95	-11.2	-8	21	13
Transp. & Mat. Moving Mach. Oper.	110,290	121,530	11,237	10.2	936	3,374	4,310
Motor Vehicle Operators	76,270	85,960	9,693	12.7	808	2,416	3,224
Truck Drivers, Heavy	36,870	40,400	3,529	9.6	294	939	1,233
Truck Drivers, Light	19,070	22,540	3,471	18.2	289	601	890
Bus Drivers	2,950	3,170	226	7.7	19	146	165
Bus Drivers, School	9,070	10,560	1,493	16.5	124	469	593
Taxi Drivers and Chauffeurs	1,520	1,740	225	14.8	19	106	125
Driver/Sales Workers	5,980	6,560	583	9.8	49	134	183
All Other Motor Vehicle Operator	810	980	166	20.4	14	21	35
Rail Transportation Workers	1,280	1,500	215	16.7	19	44	63
Railroad Conductors, Yardmasters	320	390	68	21.0	6	13	19
Locomotive Engineers	210	270	57	27.4	5	9	14
Rail Yard Engineers, Dinkey Oper.	110	130	19	17.1	2	4	6
Locomotive Firers	100	100	-4	-3.9	0	4	4

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Railroad Brake, Signal, Switch	520	600	76	14.6	6	14	20
All Other Rail Vehicle Operators	20	20	-1	-5.6	0	0	0
Water Transportation and Related	720	620	-102	-14.1	-10	22	12
Captains	70	60	-9	-13.9	-1	4	3
Mates: Ship, Boat, and Barge	70	60	-9	-12.3	-1	1	0
Pilots, Ship	60	50	-7	-12.7	-1	1	0
Motorboat Operators	40	40	0	0.0	0	1	1
Able Seamen	140	120	-26	-18.1	-2	5	3
Ordinary Seamen and Marine Oilers	230	200	-32	-14.0	-3	9	6
Ship Engineers	120	100	-19	-15.8	-2	1	-1
Aircraft Pilots, Flight Engineer	510	620	116	22.9	10	5	15
Other Transportation Workers	9,550	10,290	738	7.7	62	361	423
Bridge, Lock, Lighthouse Tenders	180	190	13	7.4	1	12	13
Service Station Attendants	7,050	7,540	489	6.9	41	241	282
Parking Lot Attendants	410	450	43	10.5	4	44	48
All Other Transportation Workers	1,920	2,110	193	10.1	16	64	80
Material Moving Equipment Oper.	21,960	22,540	577	2.6	47	526	573
Longshore Equipment Operators	20	20	0	0.0	0	2	2
Tank Car and Truck Loaders	30	30	2	6.7	0	1	1
Main Line Station Engineers	*	*	*	*	*	*	*
Gas Pumping Station Operators	*	*	*	*	*	*	*
Excavation Loading Machine Oper.	960	1,010	52	5.5	4	27	31
Dragline Operators	10	10	0	0.0	0	0	0
Dredge Operators, Dipper Tenders	*	*	*	*	*	*	*
Grader, Dozer, Scraper Operators	870	950	87	10.1	7	54	61
Hoist and Winch Operators	110	130	17	14.9	1	14	15
Crane and Tower Operators	850	970	117	13.8	10	27	37
Industrial Truck and Tractor Oper.	12,070	11,710	-354	-2.9	-30	194	164
Conveyor Operators and Tenders	1,150	1,190	45	3.9	4	21	25
Pump Operators	90	90	0	0.0	0	2	2
Operating Engineers	2,560	2,820	255	10.0	21	76	97
All Other Transp., Mat. Moving Oper.	3,220	3,580	356	11.0	30	108	138
Helpers, Laborers and Hand Movers	93,500	93,450	-42	-0.0	-4	2,279	2,275
Mechanic and Repairer Helpers	2,660	2,840	180	6.8	15	86	101
Construction Trades Helpers	6,770	7,130	361	5.3	30	93	123
Helpers, Brick and Masons	1,350	1,420	74	5.5	6	19	25
Helpers, Carpenters	2,690	2,780	97	3.6	8	37	45
Helpers, Electricians	620	740	120	19.3	10	9	19
Helpers, Painters, Plasterers	240	250	13	5.4	1	3	4
Helpers, Plumbers, Pipefitters	630	660	27	4.3	2	9	11
Helpers, Roofers	180	190	9	5.1	1	2	3
Helpers, All Other Construction	1,010	1,030	20	2.0	2	12	14
Helpers, Extractive Workers	60	60	1	1.7	0	2	2
Machine Feeders and Offbearers	6,990	6,440	-541	-7.8	-45	192	147

Table 4.8 Detailed Occupational Trends, Wisconsin 1988 to 2000 (cont.)

Occupational Title	Estimated Employment				Annual Openings		
	1988	2000	Growth	%	Growth	Separations	Total
Hand Freight, Stock, Mat. Movers	77,080	77,040	-42	-0.1	-4	1,908	1,904
Stevedores, Exc. Equipment Oper.	100	90	-7	-7.4	-1	1	0
Refuse Collectors	2,870	2,830	-36	-1.3	-3	150	147
All Other Hand Material Movers	14,880	14,950	69	0.5	6	204	210
Hand Packers and Packagers	19,240	17,090	-2,152	-11.2	-179	528	349
Vehicle, Equipment Cleaners	4,310	4,480	171	4.0	14	87	101
All Other Helper, Laborer, Mover	35,690	37,610	1,913	5.4	159	938	1,097

*=Employment suppressed under 10
Employment rounded to nearest 10

Appendix 1 Methodology

Occupation and industry projections are prepared every two years to provide the most current outlook possible for the Job Training and Partnership Act (JTPA) planning cycle. Projections may change because of more current data, because new information alters analysts' views of the future, and because of improvements. Overall trends, however, may not change significantly as projections to the year 2000 are revised.

Growth of employment in an occupation depends upon whether the occupation's share of total employment in each industry will become larger or smaller, and upon the projected total employment for each industry. So the first step in projecting occupational employment is to project employment by industry.

The largest possible total employment growth is limited by the projected size of the labor force. In Wisconsin the labor force and industry projections are prepared independently. The projected labor force is compared to the sum of all projected industries to gauge the match of the projected supply and demand for workers and to evaluate the reasonableness of both projections.

Labor Force

Labor force projections are based upon Department of Administration, Demographic Services Center projections of population and upon Department of Industry, Labor and Human Relations (DILHR) projections of labor force participation rates.

Labor force participation rates are the number of people in the labor force as a percent of the population. They are computed and projected for different age and sex categories. Participation rate projections are initially based upon past national labor force trends, because annual national data are available over a long period of time. Projections are then adjusted based upon decennial Census differences between Wisconsin and U.S. participation rates.

Recent annual average labor force participation rates are available from the Current Population Survey sample of about 1,000 households in Wisconsin. When more years of CPS data become available, and there is more information about sample error rates, this data may improve participation rate projections.

The state projections of population age 16 and over are multiplied by the projected labor force participation rates to estimate the projected labor force.

Industry Employment

Past trends in industry employment are obtained from the Current Employment Statistics program, and from Unemployment Compensation Covered Employment and Wages program. Several statistical methods are used to extend these past trends into the future to produce at least six alternative projections for each industry. Bureau of Labor Statistics and State econometric model projections are included as alternatives when available.

A panel of analysts review these trends and projections. They use their knowledge of current technology, and economic and social trends to anticipate future scenarios and probable changes in the trends. Each analyst provides an independent projection of industry employment.

The average employment projection, the mean, from the participating analysts is used in the projections of occupational employment. The high projection is the average of the three highest projections from the analysts. The low projection is the average of the three lowest projections

from the analysts. The high and low projections give an indication of the uncertainty involved in projecting to the year 2000.

Occupational Employment

The Occupational Employment Statistics survey obtains employment by occupation within each nonfarm wage and salary industry. There is no adequate sample of self-employment by occupation in Wisconsin. As a substitute, the Bureau of Labor Statistics provides national ratios of self-employment to nonfarm wage and salary employment by occupation from the Current Population Survey (CPS). These national ratios are applied to Wisconsin Occupational Employment Statistics data to estimate self-employment in Wisconsin.

The U.S. Bureau of Labor Statistics provides separation rates by occupation, derived from the national Current Population Survey. The Bureau also provides change factors used to estimate changes in the distribution of employment among occupations within each industry.

A base year table, called a matrix, of employment by occupation and industry is developed. An industry-occupational matrix program then merges this table with the industry projections to 2000, and the Bureau of Labor Statistics separation rates and change factors, to produce the year 2000 projections of occupational employment by industry, and the growth and separations.

Improvements

These projections incorporate more recent information available from the Bureau of Labor Statistics and from DILHR.

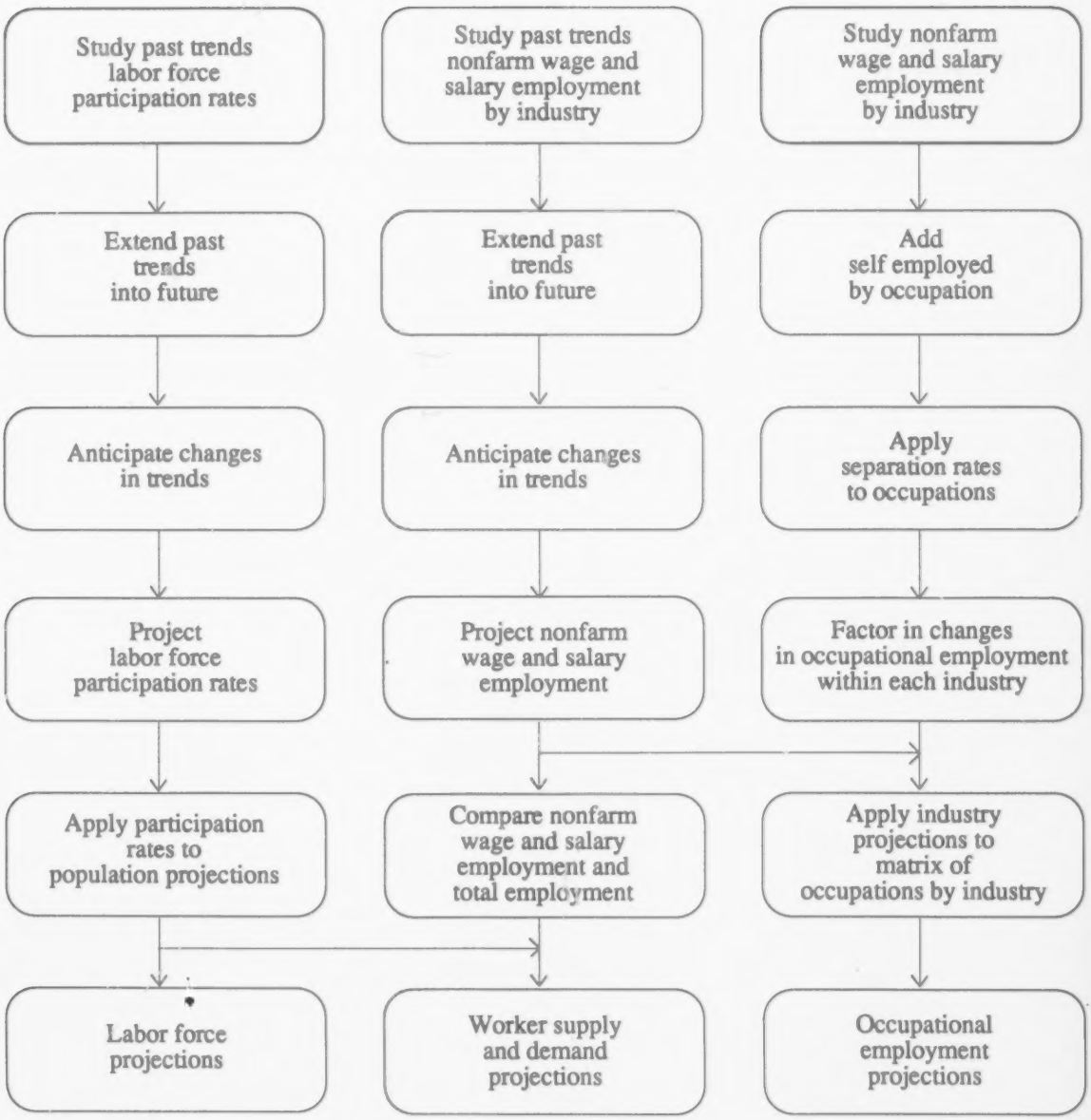
The methods used to produce occupational projections have been improved from previous projections. The last projections assumed that each detailed industry used in the occupational projections would grow at the rate projected for the broad industry group. These revised projections assume that each detailed industry's growth will be at the same ratio to the Wisconsin broad industry projection as the national industry growth's ratio is to the Bureau of Labor Statistics broad industry projection. The resulting, more accurate, industry detail is reflected in more accurate occupational projections.

Incomplete Picture

Projections of employment growth and separations present an incomplete picture of the need for training. While these projections indicate the need for a more highly trained and educated work force to fill the new jobs that will be created, the projections say nothing about changing skill requirements within the occupations.

Changes are occurring within occupations. New ways of organizing work, new quality improvement methods, and new technology change the nature of existing jobs. Evolutionary changes within occupations are not projected here. These changes within occupations must be monitored and their trends projected by business, education, and government in order to plan new educational and training programs and to modify current programs to meet changing requirements.

Methodology Chart


Study past trends labor force participation rates
Study past trends nonfarm wage and salary employment by industry
Study nonfarm wage and salary employment by industry
Extend past trends into future
Extend past trends into future
Add self employed by occupation
Anticipate changes in trends
Anticipate changes in trends
Apply separation rates to occupations
Project labor force participation rates
Project nonfarm wage and salary employment
Factor in changes in occupational employment within each industry
Apply participation rates to population projections
Compare nonfarm wage and salary employment and total employment
Apply industry projections to matrix of occupations by industry
Labor force projections
Worker supply and demand projections
Occupational employment projections

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Appendix 2 Wisconsin Labor Force - 1955-1988

Annual Average Employment (in thousands)

	1955	1960	1965	1970	1975	1980	1985	1986	1987	1988
Civilian Labor Force	1575.1	1647.0	1741.5	1830.0	2098.0	2340.0	2373.0	2403.0	2493.0	2571.0
Unemployment	46.7	64.9	59.6	72.0	146.0	167.0	171.0	169.0	152.0	110.0
% Of Labor Force	3.0	3.9	3.4	4.0	6.9	7.2	7.2	7.0	6.1	4.3
Employment	1525.3	1580.6	1680.6	1757.0	1952.0	2172.0	2202.0	2234.0	2341.0	2465.0
Farm	270.1	233.9	196.6	115.6	112.1	110.0	118.4	99.9	103.9	104.2
Nonfarm Wage & Salary	1108.1	1191.9	1331.7	1530.4	1676.8	1938.1	1983.1	2023.9	2089.6	2149.0
Mining	4.0	3.8	2.8	2.6	2.7	2.6	1.9	1.9	2.0	2.2
Construction	56.9	56.0	59.6	62.0	60.6	70.1	64.6	68.0	72.2	71.5
Manufacturing	458.0	460.4	491.9	500.9	507.0	558.0	513.9	514.5	528.7	550.6
Durable Goods Mfg.	286.5	291.7	322.5	321.5	330.3	364.4	315.5	312.8	321.3	338.0
Lumber & Wood Products	19.3	16.3	16.8	15.6	17.9	20.7	22.9	24.2	26.6	28.3
Furniture & Fixtures	10.7	8.2	7.3	7.8	8.4	9.6	9.8	10.3	10.9	11.8
Stone Clay & Glass Prod.	5.7	6.5	7.1	8.1	8.1	9.1	7.9	8.2	8.8	9.1
Primary Metal Industries	26.2	24.6	29.0	30.1	26.0	26.1	19.5	19.2	20.1	21.9
Fabricated Metal Products	33.5	33.8	38.7	43.8	51.2	58.4	51.4	52.1	53.0	57.4
Machinery, Ex. Electrical	88.7	86.5	106.2	108.2	112.4	125.7	100.5	99.7	101.3	107.3
Electric & Electronic Equip.	48.6	54.9	55.5	48.6	45.3	56.8	49.9	47.8	46.5	47.4
Transportation Equipment	35.1	48.4	45.6	36.2	41.7	34.7	32.3	30.5	33.0	32.1
Instruments & Related Prod.	9.2	4.4	6.1	9.0	9.6	12.4	11.4	11.4	12.0	12.8
Misc. Manufacturing Ind.	9.6	8.1	10.1	14.1	9.8	10.9	9.8	9.3	9.2	9.9
Nondurable Goods Mfg.	171.5	168.7	169.4	179.4	176.7	193.6	198.4	201.7	207.4	212.6
Food & Kindred Products	63.9	62.1	58.3	57.6	61.6	64.9	61.6	62.0	62.6	62.5
Textile Mill Products	8.1	6.9	6.7	7.0	5.3	4.7	4.2	3.9	4.4	4.7
App. & Other Textile Prod.	7.8	7.2	8.1	6.8	6.4	6.5	6.2	6.5	7.3	7.4
Paper & Allied Products	37.6	39.9	41.6	45.0	40.8	47.8	48.0	48.9	49.3	50.1
Printing & Publishing	20.5	21.8	22.9	25.4	27.8	32.4	38.1	39.4	41.1	43.8
Chemicals & Allied Prod.	9.0	6.4	6.8	11.3	9.2	9.7	10.0	10.1	10.3	10.5
Petroleum & Coal Prod.	0.7	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Rubber & Misc. Plas. Prod.	6.3	6.9	8.7	12.1	13.8	17.6	22.4	23.7	25.2	26.6
Leather & Leather Prod.	17.7	17.1	15.7	13.9	11.5	9.4	7.6	6.9	6.9	6.7
Trans. & Public Utilities	77.5	74.5	74.9	80.9	81.7	92.1	94.2	93.7	95.0	97.4
Trade	225.1	243.9	273.0	327.4	374.7	436.8	465.1	477.2	494.3	505.9
Finance, Ins. & Real Estate	38.5	45.7	51.5	60.5	74.5	93.3	103.8	108.1	112.6	115.4
Services	117.1	144.3	177.1	230.7	290.2	364.2	419.0	434.9	459.8	479.9
Government	131.0	163.2	201.0	265.5	285.4	321.1	320.6	325.6	325.0	326.2

Source: DILHR, Labor Market Information Bureau, 1991.

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